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# FOR FINDING STRAINS

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# TABLES

FOR

# FINDING THE STRAINS

IN

# RAILWAY BRIDGE TRUSSES

UNDER THE ACTION OF A

# CONCENTRATED LOAD SYSTEM.

REPRINTED FROM STRAINS IN FRAMED STRUCTURES.

SECOND EDITION.

BY

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# PREFACE.

THESE Tables are intended to aid those engaged in the calculation of trusses. The system of concentrated loads annexed, is very closely that generally laid down in the specifications of our principal railroads. The use of the tables will be found sufficiently illustrated for all those for whom they are designed. The principles upon which the calculations are based are given at length in the author's work, "*Strains in Framed Structures*," from which these Tables are reprinted.

*December* 10, 1884.

# TABLE I.

## CONCENTRATED LOAD SYSTEM.

**SHEAR.**

# TABLE I.

## CONCENTRATED LOAD SYSTEM.

## SHEAR.

### EXPLANATION OF TABLE.

THE load-system adopted is given in Table I. It consists of two locomotives with tenders, followed by train; the wheel-weights and distances being given in the first column. The locomotive agrees closely with the "standard consolidated engine," usually specified by the best railroad and bridge companies. It is believed that the load-system assumed is such as will give, in every case, results slightly in excess of the heaviest possible loading which can actually occur in practice.

The use of Table I. is quite simple. The length of span is $l$. The load always comes on *from right*. The maximum shear at any point, distant $x$ from *the left end*, is given by one of *four* formulæ. These formulæ, and the limits between which they hold good, are given at the head of the table. For the *first eight feet* of any span we must use formula (I.). From $x = 8$ up to a certain *limit* we must use (II.). This limit is given in the table to right, for every length of span from 27 to 300. Thus, for a span of 100 feet, this limit is $47\frac{1}{2}$ feet *from the left end*. From this limit, up to $x = l - 8$, we must use formula (III.). At the limit, both (II.) and (III.) give the same result. For the *last eight feet* of span we use formula (IV.).

Thus, for instance, for a span of 200 feet, we must use (I.) from $x = o$ up to $x = 8$. From $x = 8$ up to $x = 89\frac{1}{2}$ we must use (II.). From $x = 89\frac{1}{2}$ up to $x = 192$ we must use (III.). From $x = 192$ up to $x = 200$ we must use (IV.).

The table gives the values of $P$ and $A$ for the corresponding value of $l - x$, or $l - x - 8$.

*Thus, suppose we wish the maximum shear for a span of* 200 *feet, at* 7, 80, 100, *and* 195 *feet from end, load coming on always from right.*

For $x = 7$ we use formula (I.). We have, then, $l = 200$, $l - x = 193$. From table, we see that for any value of $l - x$ between 190 and 195 we have $P = 527000$, and $A = 41730000$. Hence, for $x = 7$,

$$\text{Shear} = \frac{527000}{200}193 - \frac{41730000}{200} = 299905 \text{ lbs.}$$

In like manner, for $x = 80$, we have $l - x = 120$, $l - x + 8 = 128$; and, since the limit is $89\frac{1}{2}$, we must use formula (II.). We have from table, for $l - x = 120$, $P = 383000$, and $A = 19410000$; and, hence,

$$\text{Shear} = \frac{15000}{200}128 + \frac{383000}{200}120 - \frac{19410000}{200} - 15000 = 127350 \text{ lbs.}$$

Observe that the table gives these values of $P$ and $A$ for any value of $l - x$ *between* 115 *and* 120, *including* 120. For any value of $l - x$ between 120 and 125, *including* 120, we have, also, $P = 395000$, $A = 20850000$; and these values in formula (II.) would give the same result. Thus,

$$\text{Shear} = \frac{15000}{200}128 + \frac{395000}{200}120 - \frac{20850000}{200} - 15000 = 127350 \text{ lbs.}$$

For $x = 100$, we have $l - x = 100$, $l - x - 8 = 92$; and, since the limit is $89\frac{1}{2}$, we must use formula (III.). We have from table, for $l - x - 8 = 92$, $P = 335000$, $A = 14370000$; and, hence,

$$\text{Shear} = \frac{15000}{200}100 + \frac{335000}{200}92 - \frac{14370000}{200} = 89750 \text{ lbs.}$$

For $x = 195$, since this falls within the last 8 feet, we must use formula (IV.). We have, then, $l - x = 5$; and

$$\text{Shear} = \frac{15000}{200}5 = 375 \text{ lbs.}$$

Whenever formulæ (I.) or (II.) apply, the second wheel is at the point: when (III.) or (IV.) apply, the first wheel is at the point.

# TABLE I.

## CONCENTRATED LOAD SYSTEM.

## SHEAR.

$l$ = length of span.

$x$ = distance from left end, in feet, of any point at which the maximum shear is required.

Values of $P$ and $A$ to be taken from table for corresponding $l - x$, or $l - x - 8$.

(I.) *From $x = o$ to $x = 8$, second wheel at point,* $\left.\right\}$ Shear $= \frac{P}{l}(l - x) - \frac{A}{l}$.

*From $x = 8$ to limit, second wheel at point,* $\left.\right\}$ Shear $= \frac{p_1}{l}(l - x + 8) + \frac{P}{l}(l - x) - \frac{A}{l} - 15000.$ (II.)

Limit to be found from table on right, $p_1 = 15000$.

(III.) *From $x =$ limit to $x = l - 8$, first wheel at point,* $\left.\right\}$ Shear $= \frac{p_1}{l}(l - x) + \frac{P}{l}(l - x - 8) - \frac{A}{l}$.

*From $x = l - 8$ to $x = l$, first wheel at point,* $\left.\right\}$ Shear $= \frac{p_1}{l}(l - x).$ (IV.)

| Weights, lbs. | | Distances. | $l-x$ or $l-x-8$. | $P$ | $A$ | Weights, lbs. | | Distances. | $l-x$ or $l-x-8$. | $P$ | $A$ | Span. | Limit | Span. | Limit. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ft. | | | | | | ft. | 91 | | | feet | $x$. | feet. | $x$. |
| Locomotive. | $p_1 = 15000$ | 8 | | | | Car. | $p_{18} = 15000$ | 4 | 91 | 335000 | 14370000 | 27 | 18.6 | 61 | 38.5 |
| | $p_2 = 25000$ | 5 | 0 | 25000 | 0 | | $p_{19} = 12000$ | 5 | 95 | 347000 | 15510000 | 28 | 19 | 62 | 39½ |
| | $p_3 = 25000$ | 5 | 5 | 50000 | 125000 | | $p_{20} = 12000$ | 10 | 100 | 359000 | 16710000 | 29 | 19.4 | 63 | 39½ |
| | $p_4 = 25000$ | 5 | 10 | 75000 | 375000 | | $p_{21} = 12000$ | 5 | 110 | 371000 | 18030000 | 30 | 19.9 | 64 | 39½ |
| | $p_5 = 25000$ | 7 | 15 | 100000 | 750000 | | $p_{22} = 12000$ | 5 | 115 | 383000 | 19410000 | 31 | 20.6 | 65 | 39½ |
| Tender. | $p_6 = 15000$ | 5 | 22 | 115000 | 1080000 | Car. | $p_{23} = 12000$ | 5 | 120 | 395000 | 20850000 | 32 | 21.3 | 66 | 39½ |
| | $p_7 = 15000$ | 5 | 27 | 130000 | 1485000 | | $p_{24} = 12000$ | 10 | 125 | 407000 | 22350000 | 33 | 22 | 67 | 39½ |
| | $p_8 = 15000$ | 5 | 32 | 145000 | 1965000 | | $p_{25} = 12000$ | 5 | 135 | 419000 | 23970000 | 34 | 22.7 | 68 | 40½ |
| | $p_9 = 15000$ | 9 | 37 | 160000 | 2520000 | | $p_{26} = 12000$ | 5 | 140 | 431000 | 25650000 | 35 | 23.4 | 69 | 40½ |
| Locomotive. | $p_{10} = 15000$ | 8 | 46 | 175000 | 3210000 | Car. | $p_{27} = 12000$ | 5 | 145 | 443000 | 27390000 | 36 | 24.1 | 70 | 41½ |
| | $p_{11} = 25000$ | 5 | 54 | 200000 | 4560000 | | $p_{28} = 12000$ | 10 | 150 | 455000 | 29190000 | 37 | 24.8 | 71 | 41½ |
| | $p_{12} = 25000$ | 5 | 59 | 225000 | 6035000 | | $p_{29} = 12000$ | 5 | 160 | 467000 | 31110000 | 38 | 25.5 | 72 | 42½ |
| | $p_{13} = 25000$ | 5 | 64 | 250000 | 7635000 | | $p_{30} = 12000$ | 5 | 165 | 479000 | 33090000 | 39 | 26.2 | 73 | 42½ |
| | $p_{14} = 25000$ | 7 | 69 | 275000 | 9360000 | | $p_{31} = 12000$ | 5 | 170 | 491000 | 35130000 | 40 | 26.8 | 74 | 42½ |
| Tender. | $p_{15} = 15000$ | 5 | 76 | 290000 | 10500000 | Car. | $p_{32} = 12000$ | 5 | 175 | 503000 | 37230000 | 41 | 27.2 | 75 | 42½ |
| | $p_{16} = 15000$ | 5 | 81 | 305000 | 11715000 | | $p_{33} = 12000$ | 10 | 185 | 515000 | 39450000 | 42 | 27.6 | 76 | 43½ |
| | $p_{17} = 15000$ | 5 | 86 | 320000 | 13005000 | | $p_{34} = 12000$ | 5 | 190 | 527000 | 41730000 | 43 | 28 | 77 | 43½ |
| | $p_{18} = 15000$ | | 91 | | | | $p_{35} = 12000$ | 5 | 195 | | | 44 | 28.7 | 78 | 44½ |
| | | | | | | | | | | | | 45 | 29.4 | 79 | 44½ |
| | | | | | | | | | | | | 46 | 30.1 | 80 | 45½ |
| | | | | | | | | | | | | 47 | 30.8 | 81 | 45½ |
| | | | | | | | | | | | | 48 | 31.5 | 82 | 45½ |
| | | | | | | | | | | | | 49 | 32.2 | 83 | 45½ |
| | | | | | | | | | | | | 50 | 32.9 | 84 | 46½ |
| | | | | | | | | | | | | 51 | 33.6 | 85 | 46½ |
| | | | | | | | | | | | | 52 | 34.3 | 86 | 47½ |
| | | | | | | | | | | | | 53 | 35 | 87 | 47½ |
| | | | | | | | | | | | | 54 | 35.4 | 88 | 48½ |
| | | | | | | | | | | | | 55 | 35.8 | 89 | 48½ |
| | | | | | | | | | | | | 56 | 36.2 | 90 | 48½ |
| | | | | | | | | | | | | 57 | 36.6 | 91 | 48½ |
| | | | | | | | | | | | | 58 | 37 | 92 | 48½ |
| | | | | | | | | | | | | 59 | 37.4 | 93 | 48½ |
| | | | | | | | | | | | | 60 | 37½ | 94 | 47½ |

# TABLE I.

## CONCENTRATED LOAD SYSTEM.

## SHEAR.

$l$ = length of span.
$x$ = distance from left end, in feet, of any point at which the maximum shear is required.
Values of $P$ and $A$ to be taken from table for corresponding $l - x$, or $l - x - 8$.

(I.) *From $x = o$ to $x = 8$, second wheel at point,* $\Big\}$ Shear $= \frac{P}{l}(l - x) - \frac{A}{l}$.

*From $x = 8$ to limit, second wheel at point,* $\Big\}$ Shear $= \frac{p_1}{l}(l - x + 8) + \frac{P}{l}(l - x) - \frac{A}{l} - 15000.$ (II.)

Limit to be found from table on right, $p_1 = 15000$.

(III.) *From $x =$ limit to $x = l - 8$, first wheel at point,* $\Big\}$ Shear $= \frac{p_1}{l}(l - x) + \frac{P}{l}(l - x - 8) - \frac{A}{l}$.

*From $x = l - 8$ to $x = l$, first wheel at point,* $\Big\}$ Shear $= \frac{p_1}{l}(l - x)$. (IV.)

| Weights, lbs. | | Distances | $l - x$ or $l - x - 8$. | $P$ | $A$ | Span. | Limit. | Span. | Limit. | Span. | Limit. | Span. | Limit. | Span. | Limit. | Span. | Limit. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | feet. | $x$. | feet. | $x$. | feet. | $x$. | feet. | $x$. | feet. | $x$. | feet. | $x$. |
| Car. | $p_{35} = 12000$ | ft. | 195 | | | | | | | | | | | | | | |
| | | 5 | | 539000 | 44070000 | 95 | 47½ | 128 | 62.5 | 161 | 79⅝ | 194 | 91 1/16 | 227 | 89 7/16 | 260 | 91⅛ |
| | $p_{36} = 12000$ | | 200 | | | 96 | 47⅞ | 129 | 63.2 | 162 | 79⅝ | 195 | 92 3/16 | 228 | 89⅛ | 261 | 91 1/16 |
| | | 10 | | 551000 | 46470000 | 97 | 47⅞ | 130 | 63 9 | 163 | 80⅛ | 196 | 92⅛ | 229 | 89 1/16 | 262 | 91 1/16 |
| | $p_{37} = 12000$ | | 210 | | | 98 | 47⅞ | 131 | 64.6 | 164 | 80⅛ | 197 | 92 1/16 | 230 | 89 1/16 | 263 | 91⅛ |
| | | 5 | | 563000 | 48990000 | 99 | 47⅞ | 132 | 65.3 | 165 | 81⅛ | 198 | 91⅛ | 231 | 89⅛ | 264 | 92⅛ |
| | $p_{38} = 12000$ | | 215 | | | 100 | 47⅞ | 133 | 66 | 166 | 81⅛ | 199 | 91 1/16 | 232 | 90⅛ | 265 | 92⅛ |
| | | 5 | | 575000 | 51570000 | 101 | 47⅞ | 134 | 66.4 | 167 | 81⅛ | 200 | 89⅛ | 233 | 90⅛ | 266 | 92⅛ |
| | $p_{39} = 12000$ | | 220 | | | 102 | 47.6 | 135 | 66.8 | 168 | 81⅛ | 201 | 89 1/16 | 234 | 90⅛ | 267 | 92 1/16 |
| | | 5 | | 587000 | 54210000 | 103 | 48 | 136 | 67.2 | 169 | 82⅛ | 202 | 88⅛ | 235 | 90 1/16 | 268 | 92⅛ |
| | $p_{40} = 12000$ | | 225 | | | 104 | 48.4 | 137 | 67.8 | 170 | 82⅛ | 203 | 88 1/16 | 236 | 90⅛ | 269 | 93 3/16 |
| | | 10 | | 599000 | 56910000 | 105 | 48.8 | 138 | 68.5 | 171 | 83⅛ | 204 | 88⅛ | 237 | 91⅛ | 270 | 93⅛ |
| | $p_{41} = 12000$ | | 235 | | | 106 | 49.2 | 139 | 69.2 | 172 | 83⅛ | 205 | 89 3/16 | 238 | 91 1/16 | 271 | 93⅛ |
| | | 5 | | 611000 | 59730000 | 107 | 49.6 | 140 | 69.9 | 173 | 84⅛ | 206 | 89 1/16 | 239 | 91⅛ | 272 | 94⅛ |
| | $p_{42} = 12000$ | | 240 | | | 108 | 50 | 141 | 70.6 | 174 | 84⅛ | 207 | 90 1/16 | 240 | 92⅛ | 273 | 94 1/16 |
| | | 5 | | 623000 | 62610000 | 109 | 50.4 | 142 | 71.3 | 175 | 84⅛ | 208 | 90⅛ | 241 | 92 1/16 | 274 | 93⅝ |
| | $p_{43} = 12000$ | | 245 | | | 110 | 50.9 | 143 | 72 | 176 | 84⅛ | 209 | 90 1/16 | 242 | 91⅛ | 275 | 93 1/16 |
| | | 5 | | 635000 | 65550000 | 111 | 51.6 | 144 | 72.7 | 177 | 85⅛ | 210 | 89 1/16 | 243 | 92 3/16 | 276 | 93⅝ |
| | $p_{44} = 12000$ | | 250 | | | 112 | 52.3 | 145 | 73.4 | 178 | 85⅛ | 211 | 90 3/16 | 244 | 92⅛ | 277 | 91 1/16 |
| | | 10 | | 647000 | 68550000 | 113 | 53 | 146 | 74.1 | 179 | 86⅛ | 212 | 90⅛ | 245 | 93 3/16 | 280 | 90⅛ |
| | $p_{45} = 12000$ | | 260 | | | 114 | 53.7 | 147 | 74.6 | 180 | 86⅛ | 213 | 91 3/16 | 246 | 93⅛ | 281 | 90⅛ |
| | | 5 | | 659000 | 71670000 | 115 | 54.4 | 148 | 75 | 181 | 87⅛ | 214 | 91 1/16 | 247 | 93 1/16 | 285 | 92 3/16 |
| | $p_{46} = 12000$ | | 265 | | | 116 | 55.1 | 149 | 75.4 | 182 | 87⅛ | 215 | 91 1/16 | 248 | 93⅛ | 286 | 91⅛ |
| | | 5 | | 671000 | 74850000 | 117 | 55.8 | 150 | 75.8 | 183 | 87 7/16 | 216 | 91⅛ | 249 | 93 1/16 | 287 | 91 1/16 |
| | $p_{47} = 12000$ | | 270 | | | 118 | 56.5 | 151 | 76.2 | 184 | 88 7/16 | 217 | 91 1/16 | 250 | 92⅝ | 291 | 93 3/16 |
| | | 5 | | 683000 | 78090000 | 119 | 57.2 | 152 | 76.6 | 185 | 88 1/16 | 218 | 91 1/16 | 251 | 90 1/16 | 292 | 93⅛ |
| | $p_{48} = 12000$ | | 275 | | | 120 | 57.8 | 153 | 77 | 186 | 89 7/16 | 219 | 92 3/16 | 252 | 90⅛ | 293 | 93 1/16 |
| | | 10 | | 695000 | 81390000 | 121 | 58.2 | 154 | 77.4 | 187 | 89 1/16 | 220 | 92⅛ | 253 | 90 1/16 | 294 | 93 1/16 |
| | $p_{49} = 12000$ | | 285 | | | 122 | 58.6 | 155 | 78⅛ | 188 | 90 7/16 | 221 | 93 3/16 | 254 | 89⅝ | 295 | 93⅜ |
| | | 5 | | 707000 | 84810000 | 123 | 59 | 156 | 78⅛ | 189 | 90 1/16 | 222 | 92⅝ | 255 | 89 1/16 | 296 | 94⅛ |
| | $p_{50} = 12000$ | | 290 | | | 124 | 59.7 | 157 | 78⅜ | 190 | 90⅝ | 223 | 92 1/16 | 256 | 90⅛ | 297 | 94⅜ |
| | | 5 | | 719000 | 88290000 | 125 | 60.4 | 158 | 78⅜ | 191 | 90 1/16 | 224 | 92⅛ | 257 | 90 1/16 | 298 | 94⅜ |
| | $p_{51} = 12000$ | | 295 | | | 126 | 61.1 | 159 | 78⅜ | 192 | 91⅛ | 225 | 92 1/16 | 258 | 90 1/16 | 299 | 94 1/16 |
| | | 5 | | 731000 | 91830000 | 127 | 61.8 | 160 | 78⅜ | 193 | 91 1/16 | 226 | 89⅜ | 259 | 91 3/16 | 300 | 94⅛ |
| | $p_{52} = 12000$ | | 300 | | | | | | | | | | | | | | |

# TABLE II.

## CONCENTRATED LOAD SYSTEM.

**MOMENTS.**

# TABLE II.

## CONCENTRATED LOAD SYSTEM.

## MOMENTS.

### EXPLANATION OF TABLE.

FOR the maximum moment at any point of any span given in the table, simply multiply the value of the reaction $R$ by the value of $x$, the distance of point from the left end, and subtract the value of $m$. The index of $p$, in the last column, shows the number of the wheel which must rest on the point, and hence the position of the load-system on the span The load-system itself is given in Table I.

Thus, for span of 200 feet: —

At 5 feet from left end, the reaction at left end is $R = 305175$ lbs. The moment is

$$Rx = 305175 \times 5 = 1525875.$$

The second wheel of the system must rest on the point.

At 10 feet from left, the reaction is $R = 306850$ lbs. The moment is

$$Rx - m = 306850 \times 10 - 120000 = 2948500.$$

The second wheel of the system must rest on the point.

At 20 feet from left, the reaction is $R = 293600$ lbs. The moment is

$$Rx - m = 293600 \times 20 - 320000 = 5552000.$$

The third wheel of the system must rest on the point.

To find the moment *at a point not given by the table*, find the reaction $R$ for this point by interpolation, and then proceed as before. Thus,

At 30.7 feet from left, the reaction is $280650 - (280650 - 278060)\frac{7}{10} = 278837$. The moment is

$$Rx - m = 278837 \times 30.7 - 645000 = 7915296.$$

The fourth wheel of the system must rest on the point.

If, however, this point *falls between two "fields,"* find the *moment* by interpolation. Thus,

At 45.4 feet from left, we have the moment at 45, $255050 \times 45 - 1095000 = 10382250$. The moment at 46 is $270290 \times 46 - 1900000 = 10533340$. At 45.4, then, we have

$$10382250 + (10533340 - 10382250)\frac{4}{10} = 10442686.$$

The fifth or sixth wheel at point, indifferently.

*In general, it will not be necessary to interpolate, but will be sufficient to take the nearest foot given in the table.*

To find the moment at any point of a span not given in the table, find the moment *at the same point* for the two nearest spans given, and interpolate.

Thus, span 204 feet, moment at 10 feet from left: —

The moment at 10 feet from left, for a span of 200 feet, is 2948500. The moment at 10 feet from left, for span of 210 feet, is 3063330. The moment at 10 feet from left, for 204 feet span, is, then,

$$2948500 + (3063330 - 2948500)\frac{4}{10} = 2994432.$$

The second wheel of system at point.

# TABLE II.

## CONCENTRATED LOAD SYSTEM.

## MOMENTS.

$$M_x = Rx - m.$$

| Span, 10 feet. | | | | Span, 11 feet. | | | | Span, 12 feet. | | | | Span, 13 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 32500 | 0 | $f_2$ | 1 | 34090 | 0 | $f_2$ | 1 | 37500 | 0 | $f_2$ | 1 | 40384 | 0 | $f_2$ |
| 2 | 27500 | | | 2 | 29545 | | | 2 | 31250 | | | 2 | 34615 | | |
| 3 | 22500 | | | 3 | 25000 | | | 3 | 27083 | | | 3 | 28846 | | |
| 4 | 17500 | | | 4 | 20454 | | | 4 | 22916 | | | 4 | 25000 | | |
| 5 | 12500 | | | 5 | 25909 | | | 5 | 18750 | | | 5 | 21153 | | |
| | | | | 6 | 21363 | | | | | | | | | | |
| | | | | | | | | 6 | 37500 | 125000 | $f_3$ | 6 | 40384 | 125000 | $f_3$ |
| | | | | | | | | | | | | 7 | 34615 | | |

| Span, 14 feet. | | | | Span, 15 feet. | | | | Span, 16 feet. | | | | Span, 17 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 42857 | 0 | $f_2$ | 1 | 45000 | 0 | $f_2$ | 1 | 46875 | 0 | $f_2$ | 1 | 50000 | 0 | $f_2$ |
| 2 | 37500 | | | 2 | 40000 | | | 2 | 42187 | | | 2 | 44117 | | |
| 3 | 32142 | | | 3 | 35000 | | | 3 | 37500 | | | 3 | 39705 | | |
| 4 | 26785 | | | 4 | 30000 | | | 4 | 32812 | | | 4 | 35294 | | |
| 5 | 23214 | | | 5 | 25000 | | | 5 | 28125 | | | 5 | 30882 | | |
| 6 | 42857 | 125000 | $f_3$ | 6 | 45000 | 125000 | $f_3$ | 6 | 46875 | 125000 | $f_3$ | 6 | 50000 | 125000 | $f_3$ |
| 7 | 37500 | | | 7 | 40000 | | | 7 | 42187 | | | 7 | 44117 | | |
| | | | | 8 | 35000 | | | 8 | 37500 | | | 8 | 39705 | | |
| | | | | | | | | | | | | 9 | 35294 | | |

# MOMENTS.

$$M_x = Rx - m.$$

| Span, 18 feet. | | | | Span, 19 feet. | | | | Span, 20 feet. | | | | Span, 21 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 52777 | | | 1 | 55263 | | | 1 | 57500 | | | 1 | 59523 | | |
| 2 | 47222 | | | 2 | 50000 | | | 2 | 52500 | | | 2 | 54761 | | |
| 3 | 41666 | 0 | $p_2$ | 3 | 44736 | 0 | $p_2$ | 3 | 47500 | 0 | $p_2$ | 3 | 50000 | 0 | $p_2$ |
| 4 | 37500 | | | 4 | 39473 | | | 4 | 42500 | | | 4 | 45238 | | |
| 5 | 33333 | | | 5 | 35526 | | | 5 | 37500 | | | 5 | 40476 | | |
| 6 | 52777 | | | 6 | 55263 | | | 6 | 57500 | | | 6 | 59523 | | |
| 7 | 47222 | | | 7 | 50000 | | | 7 | 52500 | | | 7 | 54761 | | |
| 8 | 41666 | 125000 | $p_3$ | 8 | 44736 | 125000 | $p_3$ | 8 | 47500 | 125000 | $p_3$ | 8 | 50000 | 125000 | $p_3$ |
| 9 | 37500 | | | 9 | 39473 | | | 9 | 42500 | | | 9 | 45238 | | |
| | | | | 10 | 35526 | | | 10 | 37500 | | | 10 | 40476 | | |
| | | | | | | | | | | | | 11 | 35714 | | |

| Span, 22 feet. | | | | Span, 23 feet. | | | | Span, 24 feet. | | | | Span, 25 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 61363 | | | 1 | 63043 | | | 1 | 65208 | | | 1 | 67200 | | |
| 2 | 56818 | | | 2 | 58695 | | | 2 | 60416 | | | 2 | 62600 | | |
| 3 | 52272 | 0 | $p_2$ | 3 | 54847 | 0 | $p_2$ | 3 | 56250 | 0 | $p_2$ | 3 | 58000 | 0 | $p_2$ |
| 4 | 47727 | | | 4 | 50000 | | | 4 | 52083 | | | 4 | 54000 | | |
| 5 | 43181 | | | 5 | 45652 | | | 5 | 47915 | | | 5 | 50000 | | |
| 6 | 61363 | | | 6 | 63043 | | | 6 | 65208 | | | 6 | 67200 | | |
| 7 | 56818 | | | 7 | 58695 | | | 7 | 60416 | | | 7 | 62600 | | |
| 8 | 52272 | 125000 | $p_3$ | 8 | 54847 | 125000 | $p_3$ | 8 | 56250 | 125000 | $p_3$ | 8 | 58000 | 125000 | $p_3$ |
| 9 | 47727 | | | 9 | 50000 | | | 9 | 52083 | | | 9 | 54000 | | |
| 10 | 43181 | | | 10 | 45652 | | | 10 | 47915 | | | 10 | 50000 | | |
| 11 | 38636 | | | 11 | 41304 | | | 11 | 43749 | | | 11 | 46000 | | |
| | | | | 12 | 36956 | | | 12 | 39582 | | | 12 | 42000 | | |
| | | | | | | | | | | | | 13 | 38000 | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 26 feet. | | | | SPAN, 27 feet. | | | | SPAN, 28 feet. | | | | SPAN, 29 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 69038 | | | 1 | 70740 | | | 1 | 72321 | | | 1 | 74306 | | |
| 2 | 64615 | | | 2 | 66481 | | | 2 | 68213 | | | 2 | 69820 | | |
| 3 | 60192 | 0 | $f_2$ | 3 | 62222 | 0 | $f_2$ | 3 | 64106 | 0 | $f_2$ | 3 | 65855 | 0 | $f_2$ |
| 4 | 55769 | | | 4 | 57962 | | | 4 | 60000 | | | 4 | 61889 | | |
| 5 | 51923 | | | 5 | 53703 | | | 5 | 55891 | | | 5 | 57924 | | |
| | | | | 6 | 50000 | | | 6 | 51783 | | | 6 | 53958 | | |
| 6 | 69038 | | | | | | | | | | | | | | |
| 7 | 64615 | | | 7 | 66481 | | | 7 | 68213 | | | 7 | 69820 | | |
| 8 | 60192 | | | 8 | 62222 | | | 8 | 64106 | | | 8 | 65855 | | |
| 9 | 55769 | 125000 | $f_3$ | 9 | 57962 | 125000 | $f_3$ | 9 | 60000 | 125000 | $f_3$ | 9 | 61889 | 125000 | $f_3$ |
| 10 | 51923 | | | 10 | 53703 | | | 10 | 55891 | | | 10 | 57924 | | |
| 11 | 48076 | | | 11 | 50000 | | | 11 | 51783 | | | 11 | 53958 | | |
| 12 | 44230 | | | 12 | 46296 | | | 12 | 48212 | | | 12 | 49993 | | |
| 13 | 40384 | | | 13 | 42592 | | | 13 | 44640 | | | 13 | 40544 | | |
| | | | | 14 | 53333 | 320000 | $f_3$ | 14 | 55533 | 320000 | $f_3$ | 14 | 57578 | 320000 | $f_3$ |
| | | | | | | | | | | | | 15 | 53612 | | |

| SPAN, 30 feet. | | | | SPAN, 31 feet. | | | | SPAN, 32 feet. | | | | SPAN, 33 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 76166 | | | 1 | 77903 | | | 1 | 79531 | | | 1 | 81060 | | |
| 2 | 71833 | | | 2 | 73709 | | | 2 | 75468 | | | 2 | 77121 | | |
| 3 | 67500 | 0 | $f_2$ | 3 | 69516 | 0 | $f_2$ | 3 | 71406 | 0 | $f_2$ | 3 | 73181 | 0 | $f_2$ |
| 4 | 63666 | | | 4 | 65322 | | | 4 | 67343 | | | 4 | 69242 | | |
| 5 | 59833 | | | 5 | 61612 | | | 5 | 63281 | | | 5 | 65303 | | |
| 6 | 56000 | | | 6 | 57903 | | | 6 | 59687 | | | 6 | 61363 | | |
| 7 | 71833 | | | 7 | 73709 | | | 7 | 75468 | | | 7 | 77121 | | |
| 8 | 67500 | | | 8 | 69516 | | | 8 | 71406 | | | 8 | 73181 | | |
| 9 | 63666 | 125000 | $f_3$ | 9 | 65322 | 125000 | $f_3$ | 9 | 67343 | 125000 | $f_3$ | 9 | 69242 | 125000 | $f_3$ |
| 10 | 59833 | | | 10 | 61612 | | | 10 | 63281 | | | 10 | 65303 | | |
| 11 | 56000 | | | 11 | 57903 | | | 11 | 59687 | | | 11 | 61363 | | |
| 12 | 52166 | | | 12 | 54193 | | | 12 | 56093 | | | 12 | 57878 | | |
| 13 | 48333 | | | 13 | 50483 | | | 13 | 52500 | | | 13 | 54393 | | |
| 14 | 59500 | 320000 | $f_3$ | 14 | 61290 | 320000 | $f_3$ | 14 | 63436 | 320000 | $f_3$ | 14 | 65454 | 320000 | $f_3$ |
| 15 | 55666 | | | 15 | 57580 | | | 15 | 59373 | | | 15 | 61514 | | |
| | | | | 16 | 53870 | | | 16 | 55780 | | | 16 | 57574 | | |
| | | | | | | | | | | | | 17 | 54090 | | |

# MOMENTS.

$$M_x = Rx - m.$$

| Span, 34 feet. | | | | Span, 35 feet. | | | | Span, 36 feet. | | | | Span, 37 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 82941 | | | 1 | 84714 | | | 1 | 86388 | | | 1 | 87972 | | |
| 2 | 78676 | | | 2 | 80571 | | | 2 | 82361 | | | 2 | 84054 | | |
| 3 | 74852 | 0 | $p_2$ | 3 | 76428 | 0 | $p_2$ | 3 | 78333 | 0 | $p_2$ | 3 | 80135 | 0 | $p_2$ |
| 4 | 71029 | | | 4 | 72714 | | | 4 | 74305 | | | 4 | 76216 | | |
| 5 | 67205 | | | 5 | 69000 | | | 5 | 70694 | | | 5 | 72297 | | |
| 6 | 63382 | | | 6 | 65285 | | | 6 | 67083 | | | 6 | 68702 | | |
| 7 | 78676 | | | 7 | 80571 | | | 7 | 82361 | | | 7 | 84054 | | |
| 8 | 74852 | | | 8 | 76428 | | | 8 | 78333 | | | 8 | 80135 | | |
| 9 | 71029 | | | 9 | 72714 | | | 9 | 74305 | | | 9 | 76216 | | |
| 10 | 67205 | 125000 | $p_3$ | 10 | 69000 | 125000 | $p_3$ | 10 | 70694 | 125000 | $p_3$ | 10 | 72297 | 125000 | $p_3$ |
| 11 | 63382 | | | 11 | 65285 | | | 11 | 67083 | | | 11 | 68702 | | |
| 12 | 59558 | | | 12 | 61571 | | | 12 | 63472 | | | 12 | 65108 | | |
| 13 | 56176 | | | 13 | 57857 | | | 13 | 59861 | | | 13 | 61513 | | |
| 14 | 67353 | | | 14 | 69143 | | | 14 | 70833 | | | 14 | 72513 | | |
| 15 | 63528 | | | 15 | 65428 | | | 15 | 67221 | | | 15 | 68512 | | |
| 16 | 59705 | 320000 | $p_3$ | 16 | 61714 | 320000 | $p_3$ | 16 | 63611 | 320000 | $p_3$ | 16 | 65000 | 320000 | $p_3$ |
| 17 | 55822 | | | 17 | 58000 | | | 17 | 60000 | | | 17 | 61486 | | |
| | | | | 18 | 54286 | | | 18 | 56388 | | | 18 | 57937 | | |
| | | | | | | | | | | | | 19 | 54460 | | |

| Span, 38 feet. | | | | Span, 38 feet. | | | | Span, 39 feet. | | | | Span, 39 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 89473 | | | 14 | 74737 | | | 1 | 91282 | | | 14 | 76538 | | |
| 2 | 85657 | | | 15 | 70921 | | | 2 | 87179 | | | 15 | 72819 | | |
| 3 | 81842 | 0 | $p_2$ | 16 | 67105 | 320000 | $p_3$ | 3 | 83461 | 0 | $p_2$ | 16 | 69102 | 320000 | $p_3$ |
| 4 | 78027 | | | 17 | 63685 | | | 4 | 79743 | | | 17 | 65384 | | |
| 5 | 74211 | | | 18 | 60263 | | | 5 | 76025 | | | 18 | 62050 | | |
| 6 | 70395 | | | | | | | 6 | 72307 | | | | | | |
| 7 | 85657 | | | 19 | 74737 | 645000 | $p_4$ | 7 | 87179 | | | 19 | 76538 | 645000 | $p_4$ |
| 8 | 81842 | | | | | | | 8 | 83461 | | | | | | |
| 9 | 78027 | | | | | | | 9 | 79743 | | | | | | |
| 10 | 74211 | 125000 | $p_3$ | | | | | 10 | 76025 | 125000 | $p_3$ | | | | |
| 11 | 70395 | | | | | | | 11 | 72307 | | | | | | |
| 12 | 66974 | | | | | | | 12 | 68589 | | | | | | |
| 13 | 63553 | | | | | | | 13 | 65256 | | | | | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 40 feet. | | | | SPAN, 41 feet. | | | | SPAN, 42 feet. | | | | SPAN, 43 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 93000 | | | 1 | 94634 | | | 1 | 96190 | | | 1 | 97674 | | |
| 2 | 89000 | | | 2 | 90731 | | | 2 | 92380 | | | 2 | 93953 | | |
| 3 | 85000 | 0 | $p_2$ | 3 | 86829 | 0 | $p_2$ | 3 | 88571 | 0 | $p_2$ | 3 | 90232 | 0 | $p_2$ |
| 4 | 81375 | | | 4 | 82926 | | | 4 | 84761 | | | 4 | 86511 | | |
| 5 | 77750 | | | 5 | 79390 | | | 5 | 80952 | | | 5 | 82790 | | |
| 6 | 74125 | | | 6 | 75853 | | | 6 | 77500 | | | 6 | 79069 | | |
| 7 | 89000 | | | 7 | 90731 | | | 7 | 92380 | | | 7 | 93953 | | |
| 8 | 85000 | | | 8 | 86829 | | | 8 | 88571 | | | 8 | 90232 | | |
| 9 | 81375 | | | 9 | 82926 | | | 9 | 84761 | | | 9 | 86511 | | |
| 10 | 77750 | 125000 | $p_3$ | 10 | 79390 | 125000 | $p_3$ | 10 | 80952 | 125000 | $p_3$ | 10 | 82790 | 125000 | $p_3$ |
| 11 | 74125 | | | 11 | 75853 | | | 11 | 77500 | | | 11 | 79069 | | |
| 12 | 70500 | | | 12 | 72317 | | | 12 | 74047 | | | 12 | 75697 | | |
| 13 | 66875 | | | 13 | 68780 | | | 13 | 70595 | | | 13 | 72325 | | |
| 14 | 78250 | | | 14 | 79877 | | | 14 | 81784 | | | 14 | 83604 | | |
| 15 | 74625 | | | 15 | 76341 | | | 15 | 77975 | | | 15 | 79883 | | |
| 16 | 71000 | 320000 | $p_3$ | 16 | 72804 | 320000 | $p_3$ | 16 | 74523 | 320000 | $p_3$ | 16 | 76162 | 320000 | $p_3$ |
| 17 | 67375 | | | 17 | 69267 | | | 17 | 71071 | | | 17 | 72790 | | |
| | | | | 18 | 65730 | | | 18 | 67618 | | | 18 | 69417 | | |
| 18 | 81875 | | | | | | | | | | | | | | |
| 19 | 78250 | 645000 | $p_4$ | 19 | 79877 | 645000 | $p_4$ | 19 | 81784 | 645000 | $p_4$ | 19 | 83604 | 645000 | $p_4$ |
| 20 | 74625 | | | 20 | 76341 | | | 20 | 77975 | | | 20 | 79883 | | |
| | | | | 21 | 72804 | | | 21 | 74523 | | | 21 | 76162 | | |
| | | | | | | | | | | | | 22 | 72790 | | |

| SPAN, 44 feet. | | | | SPAN, 44 feet. | | | | SPAN, 45 feet. | | | | SPAN, 45 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 99090 | | | 14 | 85340 | | | 1 | 100444 | | | 14 | 87000 | | |
| 2 | 95454 | | | 15 | 81704 | | | 2 | 96888 | | | 15 | 83444 | | |
| 3 | 91818 | 0 | $p_2$ | 16 | 78067 | 320000 | $p_3$ | 3 | 93333 | 0 | $p_2$ | 16 | 80000 | 320000 | $p_3$ |
| 4 | 88181 | | | 17 | 74431 | | | 4 | 89777 | | | 17 | 76333 | | |
| 5 | 84545 | | | 18 | 71135 | | | 5 | 86222 | | | 18 | 72777 | | |
| 6 | 80909 | | | | | | | 6 | 82666 | | | | | | |
| | | | | 19 | 85340 | | | 7 | 79111 | | | 19 | 87000 | | |
| 7 | 95454 | | | 20 | 81704 | | | | | | | 20 | 83444 | | |
| 8 | 91818 | | | 21 | 78067 | 645000 | $p_4$ | 8 | 93333 | | | 21 | 80000 | 645000 | $p_4$ |
| 9 | 88181 | | | 22 | 74431 | | | 9 | 89777 | | | 22 | 76333 | | |
| 10 | 84545 | 125000 | $p_3$ | | | | | 10 | 86222 | 125000 | $p_3$ | 23 | 72777 | | |
| 11 | 80909 | | | | | | | 11 | 82666 | | | | | | |
| 12 | 77272 | | | | | | | 12 | 79111 | | | | | | |
| 13 | 73977 | | | | | | | 13 | 75555 | | | | | | |

# MOMENTS.

$$M_x = Rx - m.$$

| Span, 46 feet. | | | | Span, 47 feet. | | | | Span, 48 feet. | | | | Span, 49 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 101739 | | | 1 | 102978 | | | 1 | 104479 | | | 1 | 105918 | | |
| 2 | 98260 | | | 2 | 99574 | | | 2 | 100834 | | | 2 | 102346 | | |
| 3 | 94782 | | | 3 | 96170 | | | 3 | 97500 | | | 3 | 98775 | | |
| 4 | 91304 | 0 | $p_2$ | 4 | 92765 | 0 | $p_2$ | 4 | 94166 | 0 | $p_2$ | 4 | 95509 | 0 | $p_2$ |
| 5 | 87826 | | | 5 | 89361 | | | 5 | 90833 | | | 5 | 92244 | | |
| 6 | 84347 | | | 6 | 85957 | | | 6 | 87500 | | | 6 | 88978 | | |
| 7 | 80869 | | | 7 | 82553 | | | 7 | 84166 | | | 7 | 85712 | | |
| 8 | 94782 | | | 8 | 96170 | | | 8 | 97500 | | | 8 | 98775 | | |
| 9 | 91304 | | | 9 | 92765 | | | 9 | 94166 | | | 9 | 95509 | | |
| 10 | 87826 | 125000 | $p_3$ | 10 | 89361 | 125000 | $p_3$ | 10 | 90833 | 125000 | $p_3$ | 10 | 92244 | 125000 | $p_3$ |
| 11 | 84347 | | | 11 | 85957 | | | 11 | 87500 | | | 11 | 88978 | | |
| 12 | 80869 | | | 12 | 82553 | | | 12 | 84166 | | | 12 | 85712 | | |
| 13 | 77391 | | | 13 | 79148 | | | 13 | 80833 | | | 13 | 82446 | | |
| 14 | 88586 | | | 14 | 90424 | | | 14 | 92187 | | | 14 | 93874 | | |
| 15 | 85107 | | | 15 | 86701 | | | 15 | 88541 | | | 15 | 90302 | | |
| 16 | 81629 | 320000 | $p_3$ | 16 | 83297 | 320000 | $p_3$ | 16 | 84895 | 320000 | $p_3$ | 16 | 86729 | 320000 | $p_3$ |
| 17 | 78151 | | | 17 | 79893 | | | 17 | 81563 | | | 17 | 83159 | | |
| 18 | 74673 | | | 18 | 76489 | | | 18 | 78229 | | | 18 | 79893 | | |
| 19 | 88586 | | | 19 | 90424 | | | 19 | 92187 | | | 19 | 93874 | | |
| 20 | 85107 | | | 20 | 86701 | | | 20 | 88541 | | | 20 | 90302 | | |
| 21 | 81629 | 645000 | $p_4$ | 21 | 83297 | 645000 | $p_4$ | 21 | 84895 | 645000 | $p_4$ | 21 | 86729 | 645000 | $p_4$ |
| 22 | 78151 | | | 22 | 79893 | | | 22 | 81563 | | | 22 | 83159 | | |
| 23 | 74673 | | | 23 | 76489 | | | 23 | 78229 | | | 23 | 79893 | | |
| | | | | 24 | 73085 | | | 24 | 74896 | | | 24 | 76628 | | |
| | | | | | | | | | | | | 25 | 73363 | | |

| Span, 50 feet. | | | | Span, 50 feet. | | | | Span, 51 feet. | | | | Span, 51 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 107300 | | | 14 | 95500 | | | 1 | 108627 | | | 14 | 97057 | | |
| 2 | 103800 | | | 15 | 92000 | | | 2 | 105196 | | | 15 | 93626 | | |
| 3 | 100300 | | | 16 | 88500 | 320000 | $p_3$ | 3 | 101764 | | | 16 | 90195 | 320000 | $p_3$ |
| 4 | 96800 | 0 | $p_2$ | 17 | 85000 | | | 4 | 98333 | 0 | $p_2$ | 17 | 86764 | | |
| 5 | 93600 | | | 18 | 81500 | | | 5 | 94901 | | | 18 | 83332 | | |
| 6 | 90400 | | | | | | | 6 | 91764 | | | | | | |
| 7 | 87200 | | | 19 | 95500 | | | 7 | 88627 | | | 19 | 97057 | | |
| | | | | 20 | 92000 | | | | | | | 20 | 93626 | | |
| 8 | 100300 | | | 21 | 88500 | | | 8 | 101764 | | | 21 | 90195 | | |
| 9 | 96800 | | | 22 | 85000 | 645000 | $p_4$ | 9 | 98333 | | | 22 | 86764 | 645000 | $p_4$ |
| 10 | 93600 | 125000 | $p_3$ | 23 | 81500 | | | 10 | 94901 | 125000 | $p_3$ | 23 | 83332 | | |
| 11 | 90400 | | | 24 | 78300 | | | 11 | 91764 | | | 24 | 79901 | | |
| 12 | 87200 | | | 25 | 75100 | | | 12 | 88627 | | | 25 | 76764 | | |
| 13 | 84000 | | | | | | | 13 | 85490 | | | 26 | 73627 | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 52 feet. | | | | SPAN, 53 feet. | | | | SPAN, 54 feet. | | | | SPAN, 55 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 109903 | | | 1 | 111132 | | | 1 | 112314 | | | 1 | 113451 | | |
| 2 | 106538 | | | 2 | 107830 | | | 2 | 109074 | | | 2 | 110272 | | |
| 3 | 103173 | | | 3 | 104528 | | | 3 | 105833 | | | 3 | 107090 | | |
| 4 | 99807 | 0 | $p_2$ | 4 | 101226 | 0 | $p_2$ | 4 | 102592 | 0 | $p_2$ | 4 | 103909 | 0 | $p_2$ |
| 5 | 96442 | | | 5 | 97924 | | | 5 | 99351 | | | 5 | 100727 | | |
| 6 | 93076 | | | 6 | 94622 | | | 6 | 96111 | | | 6 | 97545 | | |
| 7 | 90000 | | | 7 | 91320 | | | 7 | 92870 | | | 7 | 94363 | | |
| 8 | 103173 | | | 8 | 104528 | | | 8 | 105833 | | | 8 | 107090 | | |
| 9 | 99807 | | | 9 | 101226 | | | 9 | 102592 | | | 9 | 103909 | | |
| 10 | 96442 | 125000 | $p_3$ | 10 | 97924 | 125000 | $p_3$ | 10 | 99351 | 125000 | $p_3$ | 10 | 100727 | 125000 | $p_3$ |
| 11 | 93076 | | | 11 | 94622 | | | 11 | 96111 | | | 11 | 97545 | | |
| 12 | 90000 | | | 12 | 91320 | | | 12 | 92870 | | | 12 | 94363 | | |
| 13 | 86923 | | | 13 | 88301 | | | 13 | 89629 | | | 13 | 91181 | | |
| 14 | 98557 | | | 14 | 100000 | | | 14 | 101388 | | | 14 | 102727 | | |
| 15 | 95192 | | | 15 | 96697 | | | 15 | 98147 | | | 15 | 99544 | | |
| 16 | 91826 | | | 16 | 93395 | | | 16 | 94906 | | | 16 | 96362 | | |
| 17 | 88461 | 320000 | $p_3$ | 17 | 90093 | 320000 | $p_3$ | 17 | 91665 | 320000 | $p_3$ | 17 | 93181 | 320000 | $p_3$ |
| 18 | 85095 | | | 18 | 86791 | | | 18 | 88425 | | | 18 | 90000 | | |
| 19 | 81730 | | | 19 | 83489 | | | 19 | 85184 | | | 19 | 86817 | | |
| | | | | | | | | 20 | 81943 | | | 20 | 83635 | | |
| 20 | 95192 | | | 20 | 96697 | | | | | | | | | | |
| 21 | 91826 | | | 21 | 93395 | | | 21 | 94906 | | | 21 | 96362 | | |
| 22 | 88461 | | | 22 | 90093 | | | 22 | 91665 | | | 22 | 93181 | | |
| 23 | 85095 | 645000 | $p_4$ | 23 | 86791 | 645000 | $p_4$ | 23 | 88425 | 645000 | $p_4$ | 23 | 90000 | 645000 | $p_4$ |
| 24 | 81730 | | | 24 | 83489 | | | 24 | 85184 | | | 24 | 86817 | | |
| 25 | 78364 | | | 25 | 80187 | | | 25 | 81943 | | | 25 | 83635 | | |
| 26 | 75288 | | | 26 | 76885 | | | 26 | 78702 | | | 26 | 80454 | | |
| | | | | 27 | 73867 | | | 27 | 75462 | | | 27 | 77272 | | |
| | | | | | | | | | | | | 28 | 74090 | | |

| SPAN, 56 feet. | | | | SPAN, 56 feet. | | | | SPAN, 56 feet. | | | | SPAN, 56 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 115000 | | | 8 | 108303 | | | 14 | 104285 | | | 21 | 97767 | | |
| 2 | 111428 | | | 9 | 105178 | | | 15 | 100892 | | | 22 | 94642 | | |
| 3 | 108303 | | | 10 | 102053 | | | 16 | 97767 | | | 23 | 91517 | | |
| 4 | 105178 | 0 | $p_2$ | 11 | 98928 | 125000 | $p_3$ | 17 | 94642 | 320000 | $p_3$ | 24 | 88392 | 645000 | $p_4$ |
| 5 | 102053 | | | 12 | 95803 | | | 18 | 91517 | | | 25 | 85267 | | |
| 6 | 98928 | | | 13 | 92678 | | | 19 | 88392 | | | 26 | 82142 | | |
| 7 | 95803 | | | | | | | 20 | 85267 | | | 27 | 79017 | | |
| | | | | | | | | | | | | 28 | 75892 | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 57 feet. | | | | SPAN, 58 feet. | | | | SPAN, 59 feet. | | | | SPAN, 60 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 116491 | | | 1 | 117931 | | | 1 | 119322 | | | 1 | 120666 | | |
| 2 | 112983 | | | 2 | 114483 | | | 2 | 115932 | | | 2 | 117333 | | |
| 3 | 109475 | | | 3 | 111034 | | | 3 | 112542 | | | 3 | 114000 | | |
| 4 | 106405 | 0 | $p_2$ | 4 | 107586 | 0 | $p_2$ | 4 | 109152 | 0 | $p_2$ | 4 | 110666 | 0 | $p_2$ |
| 5 | 103335 | | | 5 | 104569 | | | 5 | 105762 | | | 5 | 107333 | | |
| 6 | 100265 | | | 6 | 101552 | | | 6 | 102796 | | | 6 | 104000 | | |
| 7 | 97195 | | | 7 | 98534 | | | 7 | 99830 | | | 7 | 101083 | | |
| 8 | 109475 | | | 8 | 111034 | | | 8 | 112542 | | | 8 | 114000 | | |
| 9 | 106405 | | | 9 | 107586 | | | 9 | 109152 | | | 9 | 110666 | | |
| 10 | 103335 | 125000 | $p_3$ | 10 | 104569 | 125000 | $p_3$ | 10 | 105762 | 125000 | $p_3$ | 10 | 107333 | 125000 | $p_3$ |
| 11 | 100265 | | | 11 | 101552 | | | 11 | 102796 | | | 11 | 104000 | | |
| 12 | 97195 | | | 12 | 98534 | | | 12 | 99830 | | | 12 | 101083 | | |
| 13 | 94124 | | | 13 | 95517 | | | 13 | 96864 | | | 13 | 98166 | | |
| 14 | 105790 | | | 14 | 107241 | | | 14 | 108643 | | | 14 | 110000 | | |
| 15 | 102457 | | | 15 | 103965 | | | 15 | 105423 | | | 15 | 106833 | | |
| 16 | 99124 | | | 16 | 100689 | | | 16 | 102203 | | | 16 | 103666 | | |
| 17 | 96054 | 320000 | | 17 | 97413 | 320000 | | 17 | 98983 | 320000 | | 17 | 100500 | 320000 | |
| 18 | 92984 | | $p_3$ | 18 | 94396 | | $p_3$ | 18 | 95761 | | $p_3$ | 18 | 97333 | | $p_3$ |
| 19 | 89914 | | | 19 | 91379 | | | 19 | 92796 | | | 19 | 94166 | | |
| 20 | 86843 | | | 20 | 88361 | | | 20 | 89830 | | | 20 | 91250 | | |
| 21 | 83773 | | | 21 | 85345 | | | 21 | 86864 | | | 21 | 88333 | | |
| 22 | 96054 | | | 22 | 97413 | | | 22 | 98983 | | | 22 | 100500 | | |
| 23 | 92984 | | | 23 | 94396 | | | 23 | 95761 | | | 23 | 97333 | | |
| 24 | 89914 | | | 24 | 91379 | | | 24 | 92796 | | | 24 | 94166 | | |
| 25 | 86843 | 645000 | $p_4$ | 25 | 88361 | 645000 | $p_4$ | 25 | 89830 | 645000 | $p_4$ | 25 | 91250 | 645000 | $p_4$ |
| 26 | 83773 | | | 26 | 85345 | | | 26 | 86864 | | | 26 | 88333 | | |
| 27 | 80703 | | | 27 | 82327 | | | 27 | 83897 | | | 27 | 85416 | | |
| 28 | 77633 | | | 28 | 79309 | | | 28 | 80931 | | | 28 | 82500 | | |
| 29 | 74563 | | | 29 | 76293 | | | 29 | 77965 | | | 29 | 79583 | | |
| | | | | | | | | 30 | 74500 | | | 30 | 76666 | | |

# MOMENTS.

$$M_x = Rx - m.$$

| Span, 61 feet. | | | | Span, 62 feet. | | | | Span, 63 feet. | | | | Span, 64 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 122377 | | | 1 | 124032 | | | 1 | 125634 | | | 1 | 127187 | | |
| 2 | 118688 | | | 2 | 120403 | | | 2 | 122063 | | | 2 | 123671 | | |
| 3 | 115409 | | | 3 | 116774 | | | 3 | 118492 | | | 3 | 120156 | | |
| 4 | 112131 | 0 | $p_2$ | 4 | 113548 | 0 | $p_2$ | 4 | 114920 | 0 | $p_2$ | 4 | 116640 | 0 | $p_2$ |
| 5 | 108852 | | | 5 | 110322 | | | 5 | 111746 | | | 5 | 113125 | | |
| 6 | 105573 | | | 6 | 107096 | | | 6 | 108571 | | | 6 | 110000 | | |
| 7 | 102295 | | | 7 | 103870 | | | 7 | 105396 | | | 7 | 106875 | | |
| 8 | 115409 | | | 8 | 116774 | | | 8 | 118492 | | | 8 | 120156 | | |
| 9 | 112131 | | | 9 | 113548 | | | 9 | 114920 | | | 9 | 116640 | | |
| 10 | 108852 | 125000 | $p_3$ | 10 | 110322 | 125000 | $p_3$ | 10 | 111746 | 125000 | $p_3$ | 10 | 113125 | 125000 | $p_3$ |
| 11 | 105573 | | | 11 | 107096 | | | 11 | 108571 | | | 11 | 110000 | | |
| 12 | 102295 | | | 12 | 103870 | | | 12 | 105396 | | | 12 | 106875 | | |
| 13 | 99426 | | | 13 | 100644 | | | 13 | 102222 | | | 13 | 103750 | | |
| 14 | 111311 | | | 14 | 112580 | | | 14 | 113808 | | | 14 | 115390 | | |
| 15 | 108196 | | | 15 | 109516 | | | 15 | 110792 | | | 15 | 112031 | | |
| 16 | 105081 | | | 16 | 106451 | | | 16 | 107777 | | | 16 | 109061 | | |
| 17 | 101966 | 320000 | $p_3$ | 17 | 103386 | 320000 | $p_3$ | 17 | 104761 | 320000 | $p_3$ | 17 | 106093 | 320000 | $p_3$ |
| 18 | 98851 | | | 18 | 100322 | | | 18 | 101745 | | | 18 | 103124 | | |
| 19 | 95737 | | | 19 | 97257 | | | 19 | 98729 | | | 19 | 100156 | | |
| 20 | 92622 | | | 20 | 94193 | | | 20 | 95713 | | | 20 | 97188 | | |
| 21 | 89753 | | | 21 | 91128 | | | 21 | 92698 | | | 21 | 94219 | | |
| 22 | 101966 | | | 22 | 103386 | | | 22 | 104761 | | | 22 | 106093 | | |
| 23 | 98851 | | | 23 | 100322 | | | 23 | 101745 | | | 23 | 103124 | | |
| 24 | 95737 | | | 24 | 97257 | | | 24 | 98729 | | | 24 | 100156 | | |
| 25 | 92622 | | | 25 | 94193 | | | 25 | 95713 | | | 25 | 97188 | | |
| 26 | 89753 | 645000 | $p_4$ | 26 | 91128 | 645000 | $p_4$ | 26 | 92698 | 645000 | $p_4$ | 26 | 94219 | 645000 | $p_4$ |
| 27 | 86885 | | | 27 | 88365 | | | 27 | 89682 | | | 27 | 91250 | | |
| 28 | 84016 | | | 28 | 85483 | | | 28 | 86904 | | | 28 | 88281 | | |
| 29 | 81148 | | | 29 | 82660 | | | 29 | 84126 | | | 29 | 85546 | | |
| 30 | 78279 | | | 30 | 79837 | | | 30 | 81348 | | | 30 | 82812 | | |
| 31 | 75410 | | | 31 | 77015 | | | 31 | 78570 | | | 31 | 80078 | | |
| | | | | | | | | 32 | 75792 | | | 32 | 77343 | | |

# MOMENTS.

$$M_x = Rx - m.$$

| Span, 65 feet. | | | | Span, 66 feet. | | | | Span, 67 feet. | | | | Span, 68 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 128692 | | | 1 | 130530 | | | 1 | 132313 | | | 1 | 134044 | | |
| 2 | 125231 | | | 2 | 126742 | | | 2 | 128582 | | | 2 | 130367 | | |
| 3 | 121769 | | | 3 | 123333 | | | 3 | 124850 | | | 3 | 126691 | | |
| 4 | 118308 | 0 | $p_2$ | 4 | 119924 | 0 | $p_2$ | 4 | 121492 | 0 | $p_2$ | 4 | 123014 | 0 | $p_2$ |
| 5 | 114846 | | | 5 | 116515 | | | 5 | 118134 | | | 5 | 119706 | | |
| 6 | 111385 | | | 6 | 113106 | | | 6 | 114776 | | | 6 | 116398 | | |
| 7 | 108308 | | | 7 | 109696 | | | 7 | 111417 | | | 7 | 113089 | | |
| 8 | 121769 | | | 8 | 123333 | | | 8 | 124850 | | | 8 | 126691 | | |
| 9 | 118308 | | | 9 | 119924 | | | 9 | 121492 | | | 9 | 123014 | | |
| 10 | 114846 | | | 10 | 116515 | | | 10 | 118134 | | | 10 | 119706 | | |
| 11 | 111385 | 125000 | $p_3$ | 11 | 113106 | 125000 | $p_3$ | 11 | 114776 | 125000 | $p_3$ | 11 | 116398 | 125000 | $p_3$ |
| 12 | 108308 | | | 12 | 109696 | | | 12 | 111417 | | | 12 | 113089 | | |
| 13 | 105230 | | | 13 | 106666 | | | 13 | 108059 | | | 13 | 109780 | | |
| 14 | 116923 | | | 14 | 118408 | | | 14 | 119850 | | | 14 | 121250 | | |
| 15 | 113615 | | | 15 | 115151 | | | 15 | 116641 | | | 15 | 118088 | | |
| 16 | 110307 | | | 16 | 111893 | | | 16 | 113432 | | | 16 | 114927 | | |
| 17 | 107384 | | | 17 | 108635 | | | 17 | 110223 | | | 17 | 111765 | | |
| 18 | 104461 | 320000 | $p_3$ | 18 | 105756 | 320000 | $p_3$ | 18 | 107014 | 320000 | $p_3$ | 18 | 108603 | 320000 | $p_3$ |
| 19 | 101538 | | | 19 | 102878 | | | 19 | 104178 | | | 19 | 105441 | | |
| 20 | 98614 | | | 20 | 100000 | | | 20 | 101342 | | | 20 | 102647 | | |
| 21 | 95691 | | | 21 | 97119 | | | 21 | 98506 | | | 21 | 99853 | | |
| 22 | 92769 | | | 22 | 94241 | | | 22 | 95671 | | | 22 | 97055 | | |
| 23 | 104461 | | | 23 | 105756 | | | 23 | 107014 | | | 23 | 108603 | | |
| 24 | 101538 | | | 24 | 102878 | | | 24 | 104178 | | | 24 | 105441 | | |
| 25 | 98614 | | | 25 | 100000 | | | 25 | 101342 | | | 25 | 102647 | | |
| 26 | 95691 | | | 26 | 97119 | | | 26 | 98506 | | | 26 | 99853 | | |
| 27 | 92769 | 645000 | $p_4$ | 27 | 94241 | 645000 | $p_4$ | 27 | 95671 | 645000 | $p_4$ | 27 | 97055 | 645000 | $p_4$ |
| 28 | 89847 | | | 28 | 91363 | | | 28 | 92835 | | | 28 | 94220 | | |
| 29 | 86924 | | | 29 | 88484 | | | 29 | 90000 | | | 29 | 91471 | | |
| 30 | 84232 | | | 30 | 85705 | | | 30 | 87163 | | | 30 | 88656 | | |
| 31 | 81538 | | | 31 | 82954 | | | 31 | 84327 | | | 31 | 85863 | | |
| 32 | 78845 | | | 32 | 80302 | | | 32 | 81715 | | | 32 | 83068 | | |
| 33 | 89847 | 1095000 | $p_5$ | 33 | 91363 | 1095000 | $p_5$ | 33 | 92835 | 1095000 | $p_5$ | 33 | 94220 | 1095000 | $p_5$ |
| | | | | | | | | 34 | 90000 | | | 34 | 91471 | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 69 feet. | | | | SPAN, 70 feet. | | | | SPAN, 71 feet. | | | | SPAN, 72 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 135724 | | | 1 | 137357 | | | 1 | 139295 | | | 1 | 141180 | | |
| 2 | 132101 | | | 2 | 133785 | | | 2 | 135422 | | | 2 | 137361 | | |
| 3 | 128478 | | | 3 | 130214 | | | 3 | 131901 | | | 3 | 133541 | | |
| 4 | 124855 | 0 | $f_2$ | 4 | 126642 | 0 | $f_2$ | 4 | 128380 | 0 | $f_2$ | 4 | 130070 | 0 | $f_2$ |
| 5 | 121231 | | | 5 | 123071 | | | 5 | 124859 | | | 5 | 126600 | | |
| 6 | 117971 | | | 6 | 119500 | | | 6 | 121338 | | | 6 | 123129 | | |
| 7 | 114710 | | | 7 | 116285 | | | 7 | 117816 | | | 7 | 119658 | | |
| 8 | 128478 | | | 8 | 130214 | | | 8 | 131901 | | | 8 | 133541 | | |
| 9 | 124855 | | | 9 | 126642 | | | 9 | 128380 | | | 9 | 130070 | | |
| 10 | 121231 | 125000 | $f_3$ | 10 | 123071 | 125000 | $f_3$ | 10 | 124859 | 125000 | $f_3$ | 10 | 126600 | 125000 | $f_3$ |
| 11 | 117971 | | | 11 | 119500 | | | 11 | 121338 | | | 11 | 123129 | | |
| 12 | 114710 | | | 12 | 116285 | | | 12 | 117816 | | | 12 | 119658 | | |
| 13 | 111449 | | | 13 | 113071 | | | 13 | 114646 | | | 13 | 116187 | | |
| 14 | 122970 | | | 14 | 124641 | | | 14 | 126264 | | | 14 | 127853 | | |
| 15 | 119492 | | | 15 | 121212 | | | 15 | 122882 | | | 15 | 124520 | | |
| 16 | 116375 | | | 16 | 117784 | | | 16 | 119501 | | | 16 | 121187 | | |
| 17 | 113260 | 320000 | $f_3$ | 17 | 114712 | 320000 | $f_3$ | 17 | 116118 | 320000 | $f_3$ | 17 | 117853 | 320000 | $f_3$ |
| 18 | 110144 | | | 18 | 111641 | | | 18 | 113090 | | | 18 | 114520 | | |
| 19 | 107028 | | | 19 | 108570 | | | 19 | 110062 | | | 19 | 111534 | | |
| 20 | 103912 | | | 20 | 105500 | | | 20 | 107035 | | | 20 | 108547 | | |
| 21 | 101158 | | | 21 | 102427 | | | | | | | | | | |
| | | | | | | | | 21 | 119501 | | | 21 | 121187 | | |
| 22 | 113260 | | | 22 | 114712 | | | 22 | 116118 | | | 22 | 117853 | | |
| 23 | 110144 | | | 23 | 111641 | | | 23 | 113090 | | | 23 | 114520 | | |
| 24 | 107028 | | | 24 | 108570 | | | 24 | 110062 | | | 24 | 111534 | | |
| 25 | 103912 | | | 25 | 105500 | | | 25 | 107035 | | | 25 | 108547 | | |
| 26 | 101158 | | | 26 | 102427 | | | 26 | 104006 | | | 26 | 105562 | | |
| 27 | 98405 | 645000 | $f_4$ | 27 | 99713 | 645000 | $f_4$ | 27 | 100978 | 645000 | $f_4$ | 27 | 102576 | 645000 | $f_4$ |
| 28 | 95652 | | | 28 | 97000 | | | 28 | 98302 | | | 28 | 99589 | | |
| 29 | 92897 | | | 29 | 94284 | | | 29 | 95626 | | | 29 | 96951 | | |
| 30 | 90144 | | | 30 | 91570 | | | 30 | 92949 | | | 30 | 94312 | | |
| 31 | 87390 | | | 31 | 88857 | | | 31 | 90274 | | | 31 | 91672 | | |
| 32 | 84637 | | | 32 | 86143 | | | 32 | 87598 | | | 32 | 89039 | | |
| | | | | 33 | 83428 | | | 33 | 84921 | | | 33 | 86395 | | |
| 33 | 95652 | | | | | | | | | | | | | | |
| 34 | 92897 | 1095000 | $f_5$ | 34 | 94284 | 1095000 | $f_5$ | 34 | 95626 | 1095000 | $f_5$ | 34 | 96951 | 1095000 | $f_5$ |
| 35 | 90144 | | | 35 | 91570 | | | 35 | 92949 | | | 35 | 94312 | | |
| | | | | | | | | 36 | 90274 | | | 36 | 91672 | | |

# MOMENTS.

$$M_x = Rx - m.$$

| Span, 73 feet. | | | | Span, 74 feet. | | | | Span, 75 feet. | | | | Span, 76 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 143013 | | | 1 | 144797 | | | 1 | 146533 | | | 1 | 148223 | | |
| 2 | 139246 | | | 2 | 141081 | | | 2 | 142866 | | | 2 | 144605 | | |
| 3 | 135479 | | | 3 | 137365 | | | 3 | 139200 | | | 3 | 140986 | | |
| 4 | 131712 | 0 | $p_2$ | 4 | 133049 | 0 | $p_2$ | 4 | 135533 | 0 | $p_2$ | 4 | 137368 | 0 | $p_2$ |
| 5 | 128287 | | | 5 | 129933 | | | 5 | 131866 | | | 5 | 133750 | | |
| 6 | 124863 | | | 6 | 126555 | | | 6 | 128200 | | | 6 | 130131 | | |
| 7 | 121438 | | | | | | | | | | | | | | |
| | | | | 7 | 141081 | | | 7 | 142866 | | | 7 | 144605 | | |
| 8 | 135479 | | | 8 | 137365 | | | 8 | 139200 | | | 8 | 140986 | | |
| 9 | 131712 | | | 9 | 133049 | | | 9 | 135533 | | | 9 | 137368 | | |
| 10 | 128287 | 125000 | $p_3$ | 10 | 129933 | 125000 | $p_3$ | 10 | 131866 | 125000 | $p_3$ | 10 | 133750 | 125000 | $p_3$ |
| 11 | 124863 | | | 11 | 126555 | | | 11 | 128200 | | | 11 | 130131 | | |
| 12 | 121438 | | | 12 | 123176 | | | 12 | 124866 | | | 12 | 126513 | | |
| 13 | 118013 | | | 13 | 119798 | | | 13 | 121533 | | | 13 | 123223 | | |
| 14 | 129383 | | | 14 | 131216 | | | 14 | 133000 | | | 14 | 134776 | | |
| 15 | 126095 | | | 15 | 127635 | | | 15 | 129466 | | | 15 | 131249 | | |
| 16 | 122807 | | | 16 | 124391 | | | 16 | 125933 | | | 16 | 127762 | | |
| 17 | 119520 | 320000 | $p_3$ | 17 | 121148 | 320000 | $p_3$ | 17 | 122733 | 320000 | $p_3$ | 17 | 124266 | 320000 | $p_3$ |
| 18 | 116232 | | | 18 | 117904 | | | 18 | 119533 | | | 18 | 121118 | | |
| 19 | 112945 | | | 19 | 114661 | | | 19 | 116333 | | | 19 | 117959 | | |
| 20 | 110000 | | | 20 | 111418 | | | | | | | | | | |
| | | | | | | | | 20 | 129466 | | | 20 | 131249 | | |
| 21 | 122807 | | | 21 | 124391 | | | 21 | 125933 | | | 21 | 127762 | | |
| 22 | 119520 | | | 22 | 121148 | | | 22 | 122733 | | | 22 | 124266 | | |
| 23 | 116232 | | | 23 | 117904 | | | 23 | 119533 | | | 23 | 121118 | | |
| 24 | 112945 | | | 24 | 114661 | | | 24 | 116333 | | | 24 | 117959 | | |
| 25 | 110000 | | | 25 | 111418 | | | 25 | 113133 | | | 25 | 114802 | | |
| 26 | 107054 | 645000 | $p_4$ | 26 | 108513 | 645000 | $p_4$ | 26 | 109933 | 645000 | $p_4$ | 26 | 111644 | 645000 | $p_4$ |
| 27 | 104108 | | | 27 | 105607 | | | 27 | 107066 | | | 27 | 108486 | | |
| 28 | 101164 | | | 28 | 102701 | | | 28 | 104200 | | | 28 | 105657 | | |
| 29 | 98218 | | | 29 | 99797 | | | 29 | 101333 | | | 29 | 102828 | | |
| 30 | 95616 | | | 30 | 96891 | | | 30 | 98466 | | | 30 | 100000 | | |
| 31 | 93012 | | | 31 | 94323 | | | 31 | 95600 | | | 31 | 97170 | | |
| 32 | 90410 | | | 32 | 91756 | | | 32 | 93066 | | | | | | |
| 33 | 87807 | | | 33 | 89188 | | | | | | | 32 | 108486 | | |
| | | | | | | | | 33 | 104200 | | | 33 | 105657 | | |
| 34 | 98218 | | | 34 | 99797 | | | 34 | 101333 | | | 34 | 102828 | | |
| 35 | 95616 | | | 35 | 96891 | | | 35 | 98466 | | | 35 | 100000 | | |
| 36 | 93012 | 1095000 | $p_5$ | 36 | 94323 | 1095000 | $p_5$ | 36 | 95600 | 1095000 | $p_5$ | 36 | 97170 | 1095000 | $p_5$ |
| 37 | 90410 | | | 37 | 91756 | | | 37 | 93066 | | | 37 | 94341 | | |
| | | | | | | | | 38 | 90533 | | | 38 | 91841 | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 77 feet. | | | | SPAN, 78 feet. | | | | SPAN, 79 feet. | | | | SPAN, 80 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 149870 | | | 1 | 151666 | | | 1 | 153417 | | | 1 | 155125 | | |
| 2 | 146298 | | | 2 | 147948 | | | 2 | 149746 | | | 2 | 151500 | | |
| 3 | 142727 | | | 3 | 144423 | | | 3 | 146075 | | | 3 | 147875 | | |
| 4 | 139155 | 0 | $p_2$ | 4 | 140897 | 0 | $p_2$ | 4 | 142594 | 0 | $p_2$ | 4 | 144250 | 0 | $p_2$ |
| 5 | 135584 | | | 5 | 137371 | | | 5 | 139113 | | | 5 | 140812 | | |
| 6 | 132013 | | | 6 | 133845 | | | 6 | 135632 | | | 6 | 137375 | | |
| 7 | 128442 | | | 7 | 130319 | | | 7 | 132151 | | | 7 | 133937 | | |
| 8 | 142727 | | | 8 | 144423 | | | 8 | 146075 | | | 8 | 147875 | | |
| 9 | 139155 | | | 9 | 140897 | | | 9 | 142594 | | | 9 | 144250 | | |
| 10 | 135584 | 125000 | $p_3$ | 10 | 137371 | 125000 | $p_3$ | 10 | 139113 | 125000 | $p_3$ | 10 | 140812 | 125000 | $p_3$ |
| 11 | 132013 | | | 11 | 133845 | | | 11 | 135632 | | | 11 | 137375 | | |
| 12 | 128442 | | | 12 | 130319 | | | 12 | 132151 | | | 12 | 133937 | | |
| 13 | 124871 | | | 13 | 126793 | | | 13 | 128670 | | | 13 | 130500 | | |
| 14 | 136429 | | | 14 | 138074 | | | 14 | 140000 | | | 14 | 141874 | | |
| 15 | 132987 | | | 15 | 134677 | | | 15 | 136328 | | | 15 | 138250 | | |
| 16 | 129545 | 320000 | $p_3$ | 16 | 131280 | 320000 | $p_3$ | 16 | 132974 | 320000 | $p_3$ | 16 | 134624 | 320000 | $p_3$ |
| 17 | 126104 | | | 17 | 127882 | | | 17 | 129620 | | | 17 | 131312 | | |
| 18 | 122662 | | | 18 | 124484 | | | 18 | 126265 | | | 18 | 128000 | | |
| 19 | 119546 | | | 19 | 121088 | | | | | | | | | | |
| 20 | 132987 | | | 20 | 134677 | | | 19 | 140000 | | | 19 | 141874 | | |
| 21 | 129545 | | | 21 | 131280 | | | 20 | 136328 | | | 20 | 138250 | | |
| 22 | 126104 | | | 22 | 127882 | | | 21 | 132974 | | | 21 | 134624 | | |
| 23 | 122662 | | | 23 | 124484 | | | 22 | 129620 | | | 22 | 131312 | | |
| 24 | 119546 | 645000 | $p_4$ | 24 | 121088 | 645000 | $p_4$ | 23 | 126265 | 645000 | $p_4$ | 23 | 128000 | 645000 | $p_4$ |
| 25 | 116429 | | | 25 | 118010 | | | 24 | 122910 | | | 24 | 124687 | | |
| 26 | 113312 | | | 26 | 114933 | | | 25 | 119556 | | | 25 | 121374 | | |
| 27 | 110195 | | | 27 | 111857 | | | 26 | 116518 | | | 26 | 118062 | | |
| 28 | 107077 | | | 28 | 108780 | | | 27 | 113480 | | | 27 | 115062 | | |
| 29 | 104286 | | | 29 | 105702 | | | 28 | 110442 | | | 28 | 112062 | | |
| 30 | 101494 | | | | | | | 29 | 107404 | | | | | | |
| | | | | 30 | 118010 | | | 30 | 119556 | | | 29 | 124687 | | |
| 31 | 113312 | | | 31 | 114933 | | | 31 | 116518 | | | 30 | 121374 | | |
| 32 | 110195 | | | 32 | 111857 | | | 32 | 113480 | | | 31 | 118062 | | |
| 33 | 107077 | | | 33 | 108780 | | | 33 | 110442 | | | 32 | 115062 | | |
| 34 | 104286 | 1095000 | $p_5$ | 34 | 105702 | 1095000 | $p_5$ | 34 | 107404 | 1095000 | $p_5$ | 33 | 112062 | 1095000 | $p_5$ |
| 35 | 101494 | | | 35 | 102946 | | | 35 | 104366 | | | 34 | 109062 | | |
| 36 | 98701 | | | 36 | 100190 | | | 36 | 101644 | | | 35 | 106062 | | |
| 37 | 95909 | | | 37 | 97433 | | | 37 | 98923 | | | 36 | 103062 | | |
| 38 | 93116 | | | 38 | 94677 | | | 38 | 96201 | | | 37 | 100375 | | |
| 39 | 90650 | | | 39 | 91923 | | | 39 | 93480 | | | 38 | 97687 | | |
| | | | | | | | | 40 | 90759 | | | 39 | 95000 | | |
| | | | | | | | | | | | | 40 | 92312 | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 81 feet. | | | | SPAN, 82 feet. | | | | SPAN, 83 feet. | | | | SPAN, 84 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 156790 | | | 1 | 158414 | | | 1 | 160180 | | | 1 | 161904 | | |
| 2 | 153209 | | | 2 | 154878 | | | 2 | 156506 | | | 2 | 158273 | | |
| 3 | 149629 | | | 3 | 151341 | | | 3 | 153012 | | | 3 | 154642 | | |
| 4 | 146049 | 0 | $p_2$ | 4 | 147804 | 0 | $p_2$ | 4 | 149518 | 0 | $p_2$ | 4 | 151190 | 0 | $p_2$ |
| 5 | 142469 | | | 5 | 144268 | | | 5 | 146024 | | | 5 | 147738 | | |
| 6 | 139074 | | | 6 | 140731 | | | 6 | 142530 | | | 6 | 144285 | | |
| 7 | 135679 | | | 7 | 137378 | | | 7 | 139036 | | | 7 | 140833 | | |
| 8 | 149629 | | | 8 | 151341 | | | 8 | 153012 | | | 8 | 154642 | | |
| 9 | 146049 | | | 9 | 147804 | | | 9 | 149518 | | | 9 | 151190 | | |
| 10 | 142469 | 125000 | $p_3$ | 10 | 144268 | 125000 | $p_3$ | 10 | 146024 | 125000 | $p_3$ | 10 | 147738 | 125000 | $p_3$ |
| 11 | 139074 | | | 11 | 140731 | | | 11 | 142530 | | | 11 | 144285 | | |
| 12 | 135679 | | | 12 | 137378 | | | 12 | 139036 | | | 12 | 140833 | | |
| 13 | 132283 | | | 13 | 134024 | | | 13 | 135722 | | | 13 | 137380 | | |
| 14 | 143702 | | | 14 | 145487 | | | 14 | 147228 | | | 14 | 148938 | | |
| 15 | 140122 | | | 15 | 141951 | | | 15 | 143734 | | | 15 | 145475 | | |
| 16 | 136542 | 320000 | $p_3$ | 16 | 138414 | 320000 | $p_3$ | 16 | 140239 | 320000 | $p_3$ | 16 | 142023 | 320000 | $p_3$ |
| 17 | 132962 | | | 17 | 134877 | | | 17 | 136746 | | | 17 | 138570 | | |
| 18 | 129691 | | | 18 | 131314 | | | 18 | 133251 | | | 18 | 135118 | | |
| 19 | 143702 | | | 19 | 145487 | | | 19 | 147228 | | | 19 | 148938 | | |
| 20 | 140122 | | | 20 | 141951 | | | 20 | 143734 | | | 20 | 145475 | | |
| 21 | 136542 | | | 21 | 138414 | | | 21 | 140239 | | | 21 | 142023 | | |
| 22 | 132962 | | | 22 | 134877 | | | 22 | 136746 | | | 22 | 138570 | | |
| 23 | 129691 | | | 23 | 131341 | | | 23 | 133251 | | | 23 | 135118 | | |
| 24 | 126418 | | | 24 | 128109 | | | 24 | 129757 | | | 24 | 131666 | | |
| 25 | 123147 | 645000 | $p_4$ | 25 | 124877 | 645000 | $p_4$ | 25 | 126564 | 645000 | $p_4$ | 25 | 128214 | 645000 | $p_4$ |
| 26 | 119876 | | | 26 | 121645 | | | 26 | 123372 | | | 26 | 125059 | | |
| 27 | 116604 | | | 27 | 118413 | | | | | | | | | | |
| 28 | 113641 | | | | | | | | | | | | | | |
| | | | | 28 | 131341 | | | 27 | 136746 | | | 27 | 138570 | | |
| 29 | 126418 | | | 29 | 128109 | | | 28 | 133251 | | | 28 | 135118 | | |
| 30 | 123147 | | | 30 | 124877 | | | 29 | 129757 | | | 30 | 128214 | | |
| 31 | 119876 | | | 31 | 121645 | | | 30 | 126564 | | | 32 | 121903 | | |
| 32 | 116604 | | | 32 | 118413 | | | 32 | 120179 | 1095000 | $p_5$ | 34 | 115594 | 1095000 | $p_5$ |
| 33 | 113641 | | | 33 | 115182 | | | 34 | 113794 | | | 35 | 112440 | | |
| 34 | 110678 | | | 34 | 112255 | | | 36 | 108010 | | | 36 | 109582 | | |
| 35 | 107715 | 1095000 | $p_5$ | 35 | 109328 | 1095000 | $p_5$ | 38 | 102227 | | | 37 | 106726 | | |
| 36 | 104752 | | | 36 | 106401 | | | | | | | | | | |
| 37 | 101789 | | | 37 | 103475 | | | 39 | 120179 | 1900000 | $p_6$ | 38 | 125059 | 1900000 | $p_6$ |
| 38 | 99135 | | | 38 | 100548 | | | | | | | 39 | 121903 | | |
| 39 | 96481 | | | 39 | 97926 | | | | | | | | | | |
| 40 | 93826 | | | 40 | 95304 | | | 40 | 133251 | 2550000 | $p_7$ | 40 | 135118 | 2550000 | $p_7$ |
| 41 | 91172 | | | 41 | 92682 | | | 41 | 129757 | | | 41 | 131666 | | |
| | | | | | | | | 42 | 126564 | | | 42 | 128214 | | |

# MOMENTS.

$$M_x = Rx - m.$$

| Span, 85 feet. | | | | Span, 86 feet. | | | | Span, 87 feet. | | | | Span, 88 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 163588 | | | 1 | 165232 | | | 1 | 166839 | | | 1 | 168579 | | |
| 2 | 160000 | | | 2 | 161685 | | | 2 | 163333 | | | 2 | 164943 | | |
| 3 | 156412 | | | 3 | 158139 | | | 3 | 159827 | | | 3 | 161477 | | |
| 4 | 152824 | 0 | $p_2$ | 4 | 154593 | 0 | $p_2$ | 4 | 156321 | 0 | $p_2$ | 4 | 158011 | 0 | $p_2$ |
| 5 | 149412 | | | 5 | 151046 | | | 5 | 152816 | | | 5 | 154545 | | |
| 6 | 146000 | | | 6 | 147674 | | | 6 | 149310 | | | 6 | 151079 | | |
| 7 | 142588 | | | 7 | 144302 | | | 7 | 145977 | | | 7 | 147613 | | |
| 8 | 156412 | | | 8 | 158139 | | | 8 | 159827 | | | 8 | 161477 | | |
| 9 | 152824 | | | 9 | 154593 | | | 9 | 156321 | | | 9 | 158011 | | |
| 10 | 149412 | | | 10 | 151046 | | | 10 | 152816 | | | 10 | 154545 | | |
| 11 | 146000 | 125000 | $p_3$ | 11 | 147674 | 125000 | $p_3$ | 11 | 149310 | 125000 | $p_3$ | 11 | 151079 | 125000 | $p_3$ |
| 12 | 142588 | | | 12 | 144302 | | | 12 | 145977 | | | 12 | 147613 | | |
| 13 | 139177 | | | 13 | 140930 | | | 13 | 142643 | | | 13 | 144317 | | |
| 14 | 150587 | | | 14 | 152383 | | | 14 | 154137 | | | 14 | 155951 | | |
| 15 | 147175 | | | 15 | 148837 | | | 15 | 150632 | | | 15 | 152386 | | |
| 16 | 143763 | | | 16 | 145464 | | | 16 | 147125 | | | 16 | 148919 | | |
| 17 | 140351 | 320000 | $p_3$ | 17 | 142092 | 320000 | $p_3$ | 17 | 143792 | 320000 | $p_3$ | 17 | 145454 | 320000 | $p_3$ |
| 18 | 136939 | | | 18 | 138720 | | | 18 | 140458 | | | 18 | 142158 | | |
| 19 | 133528 | | | 19 | 135348 | | | 19 | 137125 | | | 19 | 138863 | | |
| 20 | 147175 | | | 20 | 148837 | | | 20 | 150632 | | | 20 | 152386 | | |
| 21 | 143763 | | | 21 | 145464 | | | 21 | 147125 | | | 21 | 148919 | | |
| 22 | 140351 | | | 22 | 142092 | | | 22 | 143792 | | | 22 | 145454 | | |
| 23 | 136939 | 645000 | $p_4$ | 23 | 138720 | 645000 | $p_4$ | 23 | 140458 | 645000 | $p_4$ | 23 | 142158 | 645000 | $p_4$ |
| 24 | 133528 | | | 24 | 135348 | | | 24 | 137125 | | | 24 | 138863 | | |
| 25 | 130115 | | | 25 | 131976 | | | 25 | 133793 | | | 25 | 135567 | | |
| 26 | 126704 | | | 26 | 128604 | | | 26 | 130459 | | | 26 | 132272 | | |
| | | | | | | | | 27 | 127126 | | | 27 | 128976 | | |
| 27 | 140351 | | | 27 | 142092 | | | | | | | | | | |
| 28 | 136939 | | | 28 | 138720 | | | 28 | 140458 | | | 28 | 142158 | | |
| 29 | 133528 | | | 29 | 135348 | | | 29 | 137125 | | | 29 | 138863 | | |
| 30 | 130115 | | | 30 | 131976 | | | 30 | 133793 | | | 30 | 135567 | | |
| 31 | 126704 | 1095000 | $p_5$ | 31 | 128604 | 1095000 | $p_5$ | 31 | 130459 | 1095000 | $p_5$ | 31 | 132272 | 1095000 | $p_5$ |
| 32 | 123586 | | | 32 | 125232 | | | 32 | 127126 | | | 32 | 128976 | | |
| 33 | 120469 | | | 33 | 122150 | | | 33 | 123792 | | | 33 | 125680 | | |
| 34 | 117351 | | | 34 | 119068 | | | 34 | 120746 | | | 34 | 122385 | | |
| 35 | 114233 | | | 35 | 115986 | | | 35 | 117701 | | | 35 | 119373 | | |
| 36 | 133528 | | | 36 | 135348 | | | 36 | 137125 | | | 36 | 138863 | | |
| 37 | 130115 | 1900000 | $p_6$ | 37 | 131976 | 1900000 | $p_6$ | 37 | 133793 | 1900000 | $p_6$ | 37 | 135567 | 1900000 | $p_6$ |
| 38 | 126704 | | | 38 | 128604 | | | 38 | 130459 | | | 38 | 132272 | | |
| | | | | | | | | 39 | 127126 | | | 39 | 128976 | | |
| 39 | 140351 | | | 39 | 142092 | | | | | | | | | | |
| 40 | 136939 | | | 40 | 138720 | | | 40 | 140458 | | | 40 | 142158 | | |
| 41 | 133528 | 2550000 | $p_7$ | 41 | 135348 | 2550000 | $p_7$ | 41 | 137125 | 2550000 | $p_7$ | 41 | 138863 | 2550000 | $p_7$ |
| 42 | 130115 | | | 42 | 131976 | | | 42 | 133793 | | | 42 | 135567 | | |
| 43 | 126704 | | | 43 | 128604 | | | 43 | 130459 | | | 43 | 132272 | | |
| | | | | | | | | 44 | 127126 | | | 44 | 128976 | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 89 feet. | | | | SPAN, 89 feet. | | | | SPAN, 90 feet. | | | | SPAN, 90 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 170280 | | | 40 | 143819 | | | 1 | 171943 | | | 40 | 145610 | | |
| 2 | 166685 | | | 41 | 140561 | | | 2 | 168388 | | | 41 | 142222 | | |
| 3 | 163089 | | | 42 | 137303 | 2550000 | $p_7$ | 3 | 164832 | | | 42 | 139000 | 2550000 | $p_7$ |
| 4 | 159662 | 0 | $p_2$ | 43 | 134044 | | | 4 | 161277 | 0 | $p_2$ | 43 | 135777 | | |
| 5 | 156235 | | | 44 | 130786 | | | 5 | 157888 | | | 44 | 132555 | | |
| 6 | 152808 | | | | | | | 6 | 154500 | | | | | | |
| 7 | 149382 | | | | | | | 7 | 151110 | | | | | | |
| | | | | 45 | 143819 | 3275000 | $p_8$ | | | | | 45 | 145610 | 3275000 | $p_8$ |
| 8 | 163089 | | | | | | | 8 | 164832 | | | | | | |
| 9 | 159662 | | | | | | | 9 | 161277 | | | | | | |
| 10 | 156235 | 125000 | $p_3$ | | | | | 10 | 157888 | 125000 | $p_3$ | | | | |
| 11 | 152808 | | | | | | | 11 | 154500 | | | | | | |
| 12 | 149382 | | | | | | | 12 | 151110 | | | | | | |
| 13 | 145955 | | | | | | | 13 | 147721 | | | | | | |
| 14 | 157527 | | | | | | | 14 | 159166 | | | | | | |
| 15 | 154100 | | | | | | | 15 | 155776 | | | | | | |
| 16 | 150673 | 320000 | $p_3$ | | | | | 16 | 152388 | 320000 | $p_3$ | | | | |
| 17 | 147246 | | | | | | | 17 | 149000 | | | | | | |
| 18 | 143819 | | | | | | | 18 | 145610 | | | | | | |
| 19 | 140561 | | | | | | | 19 | 142222 | | | | | | |
| 20 | 154100 | | | | | | | 20 | 155776 | | | | | | |
| 21 | 150673 | | | | | | | 21 | 152388 | | | | | | |
| 22 | 147246 | | | | | | | 22 | 149000 | | | | | | |
| 23 | 143819 | 645000 | $p_4$ | | | | | 23 | 145610 | 645000 | $p_4$ | | | | |
| 24 | 140561 | | | | | | | 24 | 142222 | | | | | | |
| 25 | 137303 | | | | | | | 25 | 139000 | | | | | | |
| 26 | 134044 | | | | | | | 26 | 135777 | | | | | | |
| 27 | 130786 | | | | | | | 27 | 132555 | | | | | | |
| 28 | 143819 | | | | | | | 28 | 145610 | | | | | | |
| 29 | 140561 | | | | | | | 29 | 142222 | | | | | | |
| 30 | 137303 | | | | | | | 30 | 139000 | | | | | | |
| 31 | 134044 | 1095000 | $p_5$ | | | | | 31 | 135777 | 1095000 | $p_5$ | | | | |
| 32 | 130786 | | | | | | | 32 | 132555 | | | | | | |
| 33 | 127527 | | | | | | | 33 | 129333 | | | | | | |
| 34 | 124269 | | | | | | | 34 | 126110 | | | | | | |
| 35 | 121010 | | | | | | | 35 | 122888 | | | | | | |
| 36 | 140561 | | | | | | | 36 | 142222 | | | | | | |
| 37 | 137303 | 1900000 | $p_6$ | | | | | 37 | 139000 | 1900000 | $p_6$ | | | | |
| 38 | 134044 | | | | | | | 38 | 135777 | | | | | | |
| 39 | 130786 | | | | | | | 39 | 132555 | | | | | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 91 feet. | | | | SPAN, 91 feet. | | | | SPAN, 92 feet. | | | | SPAN, 92 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 173571 | | | 28 | 147361 | | | 1 | 175163 | | | 28 | 149075 | | |
| 2 | 170054 | | | 29 | 144011 | | | 2 | 171684 | | | 29 | 145760 | | |
| 3 | 166538 | | | 30 | 140660 | | | 3 | 168206 | | | 30 | 142444 | | |
| 4 | 163021 | 0 | $p_2$ | 31 | 137473 | 1095000 | $p_5$ | 4 | 164728 | 0 | $p_2$ | 31 | 139129 | 1095000 | $p_5$ |
| 5 | 159505 | | | 32 | 134286 | | | 5 | 161250 | | | 32 | 135977 | | |
| 6 | 156153 | | | 33 | 131100 | | | 6 | 157771 | | | 33 | 132825 | | |
| 7 | 152802 | | | 34 | 127912 | | | 7 | 154456 | | | 34 | 129673 | | |
| | | | | 35 | 124725 | | | | | | | 35 | 126521 | | |
| 8 | 166538 | | | | | | | 8 | 168206 | | | | | | |
| 9 | 163021 | | | 36 | 144011 | | | 9 | 164728 | | | 36 | 145760 | | |
| 10 | 159505 | | | 37 | 140660 | | | 10 | 161250 | | | 37 | 142444 | | |
| 11 | 156153 | 125000 | $p_3$ | 38 | 137473 | 1900000 | $p_6$ | 11 | 157771 | 125000 | $p_3$ | 38 | 139129 | 1900000 | $p_6$ |
| 12 | 152802 | | | 39 | 134286 | | | 12 | 154456 | | | 39 | 135977 | | |
| 13 | 149450 | | | | | | | 13 | 151141 | | | | | | |
| | | | | 40 | 147361 | | | | | | | 40 | 149075 | | |
| 14 | 160933 | | | 41 | 144011 | | | 14 | 162662 | | | 41 | 145760 | | |
| 15 | 157417 | | | 42 | 140660 | | | 15 | 159183 | | | 42 | 142444 | | |
| 16 | 154065 | | | 43 | 137473 | 2550000 | $p_7$ | 16 | 155705 | | | 43 | 139129 | 2550000 | $p_7$ |
| 17 | 150713 | | | 44 | 134286 | | | 17 | 152390 | | | 44 | 135977 | | |
| 18 | 147361 | 320000 | $p_3$ | | | | | 18 | 149075 | 320000 | $p_3$ | | | | |
| 19 | 144011 | | | | | | | 19 | 145760 | | | | | | |
| | | | | 45 | 147361 | | | | | | | 45 | 149075 | | |
| 20 | 157417 | | | 46 | 144011 | 3275000 | $p_8$ | 20 | 159183 | | | 46 | 145760 | 3275000 | $p_8$ |
| 21 | 154065 | | | | | | | 21 | 155705 | | | | | | |
| 22 | 150713 | | | | | | | 22 | 152390 | | | | | | |
| 23 | 147361 | | | | | | | 23 | 149075 | | | | | | |
| 24 | 144011 | 645000 | $p_4$ | | | | | 24 | 145760 | 645000 | $p_4$ | | | | |
| 25 | 140660 | | | | | | | 25 | 142444 | | | | | | |
| 26 | 137473 | | | | | | | 26 | 139129 | | | | | | |
| 27 | 134286 | | | | | | | 27 | 135977 | | | | | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 93 feet. | | | | SPAN, 93 feet. | | | | SPAN, 94 feet. | | | | SPAN, 94 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 176881 | | | 28 | 150752 | | | 1 | 178563 | | | 28 | 152392 | | |
| 2 | 173279 | | | 29 | 147472 | | | 2 | 175000 | | | 29 | 149147 | | |
| 3 | 169838 | | | 30 | 144192 | | | 3 | 171436 | | | 30 | 145902 | | |
| 4 | 166397 | 0 | $p_2$ | 31 | 140913 | 1095000 | $p_5$ | 4 | 168031 | 0 | $p_2$ | 31 | 142658 | 1095000 | $p_5$ |
| 5 | 162956 | | | 32 | 137634 | | | 5 | 164627 | | | 32 | 139413 | | |
| 6 | 159516 | | | 33 | 134516 | | | 6 | 161223 | | | 33 | 136168 | | |
| 7 | 156075 | | | 34 | 131397 | | | 7 | 157819 | | | 34 | 133083 | | |
| | | | | 35 | 128279 | | | | | | | 35 | 130000 | | |
| | | | | 36 | 125161 | | | | | | | 36 | 126913 | | |
| 8 | 169838 | | | | | | | 8 | 171436 | | | | | | |
| 9 | 166397 | | | | | | | 9 | 168031 | | | | | | |
| 10 | 162957 | | | 37 | 144192 | | | 10 | 164627 | | | 37 | 145902 | | |
| 11 | 159516 | 125000 | $p_3$ | 38 | 140913 | 1900000 | $p_6$ | 11 | 161223 | 125000 | $p_3$ | 38 | 142658 | 1900000 | $p_6$ |
| 12 | 156075 | | | 39 | 137634 | | | 12 | 157819 | | | 39 | 139413 | | |
| 13 | 152795 | | | 40 | 134516 | | | 13 | 154414 | | | 40 | 136168 | | |
| 14 | 164354 | | | 41 | 147472 | | | 14 | 166010 | | | 41 | 149147 | | |
| 15 | 160913 | | | 42 | 144192 | | | 15 | 162605 | | | 42 | 145902 | | |
| 16 | 157472 | | | 43 | 140913 | 2550000 | $p_7$ | 16 | 159201 | | | 43 | 142658 | 2550000 | $p_7$ |
| 17 | 154031 | 320000 | $p_3$ | 44 | 137634 | | | 17 | 155796 | 320000 | $p_3$ | 44 | 139413 | | |
| 18 | 150752 | | | | | | | 18 | 152392 | | | | | | |
| 19 | 147472 | | | | | | | 19 | 149147 | | | | | | |
| | | | | 45 | 150752 | | | | | | | 45 | 152392 | | |
| | | | | 46 | 147472 | 3275000 | $p_8$ | | | | | 46 | 149147 | 3275000 | $p_8$ |
| | | | | 47 | 144192 | | | | | | | 47 | 145902 | | |
| 20 | 160913 | | | | | | | 20 | 162605 | | | | | | |
| 21 | 157472 | | | | | | | 21 | 159201 | | | | | | |
| 22 | 154031 | | | | | | | 22 | 155796 | | | | | | |
| 23 | 150752 | 645000 | $p_4$ | | | | | 23 | 152392 | 645000 | $p_4$ | | | | |
| 24 | 147472 | | | | | | | 24 | 149147 | | | | | | |
| 25 | 144192 | | | | | | | 25 | 145902 | | | | | | |
| 26 | 140913 | | | | | | | 26 | 142658 | | | | | | |
| 27 | 137634 | | | | | | | 27 | 139413 | | | | | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 95 feet. | | | | SPAN, 95 feet. | | | | SPAN, 96 feet. | | | | SPAN, 96 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 180211 | | | 41 | 150788 | | | 1 | 181822 | | | 41 | 152552 | | |
| 2 | 176684 | | | 42 | 147578 | | | 2 | 178333 | | | 42 | 149219 | | |
| 3 | 173157 | | | 43 | 144367 | 2550000 | $p_7$ | 3 | 174843 | | | 43 | 146042 | 2550000 | $p_7$ |
| 4 | 169631 | 0 | $p_2$ | 44 | 141157 | | | 4 | 171354 | 0 | $p_2$ | 44 | 142865 | | |
| 5 | 166263 | | | | | | | 5 | 167864 | | | | | | |
| 6 | 162894 | | | 45 | 154157 | | | 6 | 164531 | | | 45 | 155885 | | |
| 7 | 159526 | | | 46 | 150788 | | | 7 | 161197 | | | 46 | 152552 | | |
| 8 | 173157 | | | 47 | 147578 | 3275000 | $p_8$ | 8 | 174843 | | | 47 | 149219 | 3275000 | $p_8$ |
| 9 | 169631 | | | 48 | 144367 | | | 9 | 171354 | | | 48 | 146042 | | |
| 10 | 166263 | | | | | | | 10 | 167864 | | | | | | |
| 11 | 162894 | 125000 | $p_3$ | | | | | 11 | 164531 | 125000 | $p_3$ | | | | |
| 12 | 159526 | | | | | | | 12 | 161197 | | | | | | |
| 13 | 156157 | | | | | | | 13 | 157864 | | | | | | |
| 14 | 167631 | | | | | | | 14 | 169374 | | | | | | |
| 15 | 164262 | | | | | | | 15 | 165884 | | | | | | |
| 16 | 160894 | | | | | | | 16 | 162551 | | | | | | |
| 17 | 157525 | 320000 | $p_3$ | | | | | 17 | 159218 | 320000 | $p_3$ | | | | |
| 18 | 154157 | | | | | | | 18 | 155885 | | | | | | |
| 19 | 150788 | | | | | | | 19 | 152552 | | | | | | |
| 20 | 164262 | | | | | | | 20 | 165884 | | | | | | |
| 21 | 160894 | | | | | | | 21 | 162551 | | | | | | |
| 22 | 157525 | | | | | | | 22 | 159218 | | | | | | |
| 23 | 154157 | | | | | | | 23 | 155885 | | | | | | |
| 24 | 150788 | 645000 | $p_4$ | | | | | 24 | 152552 | 645000 | $p_4$ | | | | |
| 25 | 147578 | | | | | | | 25 | 149219 | | | | | | |
| 26 | 144367 | | | | | | | 26 | 146042 | | | | | | |
| 27 | 141157 | | | | | | | 27 | 142865 | | | | | | |
| 28 | 154157 | | | | | | | 28 | 155885 | | | | | | |
| 29 | 150788 | | | | | | | 29 | 152552 | | | | | | |
| 30 | 147578 | | | | | | | 30 | 149219 | | | | | | |
| 31 | 144367 | | | | | | | 31 | 146042 | | | | | | |
| 32 | 141157 | 1095000 | $p_5$ | | | | | 32 | 142865 | 1095000 | $p_5$ | | | | |
| 33 | 137948 | | | | | | | 33 | 139689 | | | | | | |
| 34 | 134738 | | | | | | | 34 | 136512 | | | | | | |
| 35 | 131686 | | | | | | | 35 | 133335 | | | | | | |
| 36 | 128634 | | | | | | | 36 | 130314 | | | | | | |
| 37 | 147578 | | | | | | | 37 | 149219 | | | | | | |
| 38 | 144367 | | | | | | | 38 | 146042 | | | | | | |
| 39 | 141157 | 1900000 | $p_6$ | | | | | 39 | 142865 | 1900000 | $p_6$ | | | | |
| 40 | 137948 | | | | | | | 40 | 139689 | | | | | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 97 feet. | | | | SPAN, 97 feet. | | | | SPAN, 98 feet. | | | | SPAN, 98 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 183525 | | | 41 | 150978 | | | 1 | 185193 | | | 41 | 155968 | | |
| 2 | 179948 | | | 42 | 147679 | 2550000 | $p_7$ | 2 | 181653 | | | 42 | 152703 | 2550000 | $p_7$ |
| 3 | 176494 | 0 | $p_2$ | 43 | 144535 | | | 3 | 178112 | 0 | $p_2$ | 43 | 149438 | | |
| 4 | 173041 | | | 44 | 141391 | | | 4 | 174693 | | | 44 | 146173 | | |
| 5 | 169587 | | | | | | | 5 | 171275 | | | | | | |
| 6 | 166134 | | | 45 | 157576 | | | 6 | 167857 | | | 45 | 159234 | | |
| 7 | 162835 | | | 46 | 154278 | | | 7 | 164438 | | | 46 | 155968 | | |
| | | | | 47 | 150978 | 3275000 | $p_8$ | | | | | 47 | 152703 | 3275000 | $p_8$ |
| 8 | 176494 | | | 48 | 147679 | | | 8 | 178112 | | | 48 | 149438 | | |
| 9 | 173041 | | | 49 | 144535 | | | 9 | 174693 | | | 49 | 146173 | | |
| 10 | 169587 | 125000 | $p_3$ | | | | | 10 | 171275 | 125000 | $p_3$ | | | | |
| 11 | 166134 | | | | | | | 11 | 167857 | | | | | | |
| 12 | 162835 | | | | | | | 12 | 164438 | | | | | | |
| 13 | 159536 | | | | | | | 13 | 161173 | | | | | | |
| 14 | 171082 | | | | | | | 14 | 172754 | | | | | | |
| 15 | 167628 | | | | | | | 15 | 169335 | | | | | | |
| 16 | 164175 | 320000 | $p_3$ | | | | | 16 | 165917 | 320000 | $p_3$ | | | | |
| 17 | 160875 | | | | | | | 17 | 162500 | | | | | | |
| 18 | 157576 | | | | | | | 18 | 159234 | | | | | | |
| 19 | 154278 | | | | | | | 19 | 155968 | | | | | | |
| 20 | 167628 | | | | | | | 20 | 169335 | | | | | | |
| 21 | 164175 | | | | | | | 21 | 165917 | | | | | | |
| 22 | 160875 | | | | | | | 22 | 162500 | | | | | | |
| 23 | 157576 | 645000 | $p_4$ | | | | | 23 | 159234 | 645000 | $p_4$ | | | | |
| 24 | 154278 | | | | | | | 24 | 155968 | | | | | | |
| 25 | 150978 | | | | | | | 25 | 152703 | | | | | | |
| 26 | 147679 | | | | | | | 26 | 149438 | | | | | | |
| 27 | 144535 | | | | | | | 27 | 146173 | | | | | | |
| 28 | 157576 | | | | | | | 28 | 159234 | | | | | | |
| 29 | 154278 | | | | | | | 29 | 155968 | | | | | | |
| 30 | 150978 | | | | | | | 30 | 152703 | | | | | | |
| 31 | 147679 | | | | | | | 31 | 149438 | | | | | | |
| 32 | 144535 | 1095000 | $p_5$ | | | | | 32 | 146173 | 1095000 | $p_5$ | | | | |
| 33 | 141391 | | | | | | | 33 | 143060 | | | | | | |
| 34 | 138246 | | | | | | | 34 | 139948 | | | | | | |
| 35 | 135102 | | | | | | | 35 | 136836 | | | | | | |
| 36 | 132958 | | | | | | | 36 | 133724 | | | | | | |
| 37 | 150978 | | | | | | | 37 | 152703 | | | | | | |
| 38 | 147679 | | | | | | | 38 | 149438 | | | | | | |
| 39 | 144535 | 1900000 | $p_6$ | | | | | 39 | 146173 | 1900000 | $p_6$ | | | | |
| 40 | 141391 | | | | | | | 40 | 143060 | | | | | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 99 feet. | | | | SPAN, 99 feet. | | | | SPAN, 100 feet. | | | | SPAN, 100 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 186828 | | | 41 | 157625 | | | 1 | 188430 | | | 41 | 159250 | | |
| 2 | 183323 | | | 42 | 154393 | 2550000 | $p_7$ | 2 | 184960 | | | 42 | 156050 | 2550000 | $p_7$ |
| 3 | 179818 | | | 43 | 151160 | | | 3 | 181490 | | | 43 | 152850 | | |
| 4 | 176313 | 0 | $p_2$ | 44 | 147928 | | | 4 | 178020 | 0 | $p_2$ | 44 | 149650 | | |
| 5 | 172924 | | | | | | | 5 | 174550 | | | | | | |
| 6 | 169545 | | | 45 | 160858 | | | 6 | 171200 | | | 45 | 162600 | | |
| 7 | 166161 | | | 46 | 157625 | | | 7 | 167850 | | | 46 | 159250 | | |
| | | | | 47 | 154393 | 3275000 | $p_8$ | | | | | 47 | 156050 | 3275000 | $p_8$ |
| 8 | 179818 | | | 48 | 151160 | | | 8 | 181490 | | | 48 | 152850 | | |
| 9 | 176313 | | | 49 | 147928 | | | 9 | 178020 | | | 49 | 149650 | | |
| 10 | 172929 | 125000 | $p_3$ | 50 | 144696 | | | 10 | 174550 | 125000 | $p_3$ | | | | |
| 11 | 169545 | | | | | | | 11 | 171200 | | | | | | |
| 12 | 166161 | | | | | | | 12 | 167850 | | | 50 | 178020 | 4840000 | $p_{10}$ |
| 13 | 162777 | | | | | | | 13 | 164500 | | | | | | |
| 14 | 174393 | | | | | | | 14 | 176000 | | | | | | |
| 15 | 171000 | | | | | | | 15 | 172650 | | | | | | |
| 16 | 167625 | 320000 | $p_3$ | | | | | 16 | 169300 | 320000 | $p_3$ | | | | |
| 17 | 164241 | | | | | | | 17 | 165950 | | | | | | |
| 18 | 160858 | | | | | | | 18 | 162600 | | | | | | |
| 19 | 157625 | | | | | | | 19 | 159250 | | | | | | |
| 20 | 171009 | | | | | | | 20 | 172650 | | | | | | |
| 21 | 167625 | | | | | | | 21 | 169300 | | | | | | |
| 22 | 164241 | | | | | | | 22 | 165950 | | | | | | |
| 23 | 160858 | 645000 | $p_4$ | | | | | 23 | 162600 | 645000 | $p_4$ | | | | |
| 24 | 157625 | | | | | | | 24 | 159250 | | | | | | |
| 25 | 154393 | | | | | | | 25 | 156050 | | | | | | |
| 26 | 151160 | | | | | | | 26 | 152850 | | | | | | |
| 27 | 147928 | | | | | | | | | | | | | | |
| | | | | | | | | 27 | 165950 | | | | | | |
| 28 | 160858 | | | | | | | 28 | 162600 | | | | | | |
| 29 | 157625 | | | | | | | 29 | 159250 | | | | | | |
| 30 | 154393 | | | | | | | 30 | 156050 | | | | | | |
| 31 | 151160 | | | | | | | 31 | 152850 | | | | | | |
| 32 | 147928 | 1095000 | $p_5$ | | | | | 32 | 149650 | 1095000 | $p_5$ | | | | |
| 33 | 144696 | | | | | | | 33 | 146450 | | | | | | |
| 34 | 141615 | | | | | | | 34 | 143250 | | | | | | |
| 35 | 138534 | | | | | | | 35 | 140200 | | | | | | |
| 36 | 135454 | | | | | | | 36 | 137150 | | | | | | |
| 37 | 154393 | | | | | | | 37 | 156050 | | | | | | |
| 38 | 151160 | 1900000 | $p_6$ | | | | | 38 | 152850 | 1900000 | $p_6$ | | | | |
| 39 | 147928 | | | | | | | 39 | 149650 | | | | | | |
| 40 | 144696 | | | | | | | 40 | 146450 | | | | | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 103 feet. | | | | SPAN, 103 feet. | | | | SPAN, 105 feet. | | | | SPAN, 105 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 193281 | 0 | $p_2$ | 41 | 164368 | 2550000 | $p_7$ | 1 | 196438 | 0 | $p_2$ | 41 | 167619 | 2550000 | $p_7$ |
| 2 | 189796 | | | 42 | 161115 | | | 2 | 193019 | | | 42 | 164429 | | |
| 3 | 186310 | | | 43 | 157963 | | | 3 | 189600 | | | 43 | 161234 | | |
| 4 | 182941 | | | 44 | 154611 | | | 4 | 186180 | | | 44 | 158048 | | |
| 5 | 179572 | | | 45 | 151504 | | | 5 | 182761 | | | 45 | 154858 | | |
| 6 | 176203 | | | | | | | 6 | 179457 | | | | | | |
| 7 | 172834 | | | | | | | 7 | 176152 | | | | | | |
| 8 | 186310 | 125000 | $p_3$ | 46 | 164368 | 3275000 | $p_8$ | 8 | 189600 | 125000 | $p_3$ | 46 | 167619 | 3275000 | $p_8$ |
| 9 | 182941 | | | 47 | 161115 | | | 9 | 186180 | | | 47 | 164429 | | |
| 10 | 179572 | | | 48 | 157963 | | | 10 | 182761 | | | 48 | 161234 | | |
| 11 | 176203 | | | 49 | 154611 | | | 11 | 179457 | | | 49 | 158048 | | |
| 12 | 172834 | | | | | | | 12 | 176152 | | | | | | |
| 13 | 169466 | | | | | | | 13 | 172848 | | | | | | |
| 14 | 181067 | 320000 | $p_3$ | 50 | 182941 | 4840000 | $p_{10}$ | 14 | 184400 | 320000 | $p_3$ | 50 | 170952 | 4075000 | $p_9$ |
| 15 | 177669 | | | 51 | 179572 | | | 15 | 180953 | | | | | | |
| 16 | 174271 | | | 52 | 176203 | | | 16 | 177619 | | | 51 | 182761 | 4840000 | $p_{10}$ |
| 17 | 170873 | | | | | | | 17 | 173286 | | | 52 | 179457 | | |
| 18 | 167620 | | | | | | | 18 | 170952 | | | 53 | 176152 | | |
| 19 | 164368 | | | | | | | 19 | 167619 | | | | | | |
| 20 | 177669 | 645000 | $p_4$ | | | | | 20 | 180953 | 645000 | $p_4$ | | | | |
| 21 | 174271 | | | | | | | 21 | 177619 | | | | | | |
| 22 | 170873 | | | | | | | 22 | 173286 | | | | | | |
| 23 | 167620 | | | | | | | 23 | 170952 | | | | | | |
| 24 | 164368 | | | | | | | 24 | 167619 | | | | | | |
| 25 | 161115 | | | | | | | 25 | 164429 | | | | | | |
| 26 | 157963 | | | | | | | 26 | 161234 | | | | | | |
| 27 | 154611 | | | | | | | 27 | 158048 | | | | | | |
| 28 | 167620 | 1095000 | $p_5$ | | | | | 28 | 170952 | 1095000 | $p_5$ | | | | |
| 29 | 164368 | | | | | | | 29 | 167619 | | | | | | |
| 30 | 161115 | | | | | | | 30 | 164429 | | | | | | |
| 31 | 157963 | | | | | | | 31 | 161234 | | | | | | |
| 32 | 154611 | | | | | | | 32 | 158048 | | | | | | |
| 33 | 151504 | | | | | | | 33 | 154858 | | | | | | |
| 34 | 148398 | | | | | | | 34 | 151668 | | | | | | |
| 35 | 145290 | | | | | | | 35 | 148621 | | | | | | |
| 36 | 142183 | | | | | | | 36 | 145574 | | | | | | |
| 37 | 161115 | 1900000 | $p_6$ | | | | | 37 | 164429 | 1900000 | $p_6$ | | | | |
| 38 | 157963 | | | | | | | 38 | 161234 | | | | | | |
| 39 | 154611 | | | | | | | 39 | 158048 | | | | | | |
| 40 | 151504 | | | | | | | 40 | 154858 | | | | | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 108 feet. | | | | SPAN, 108 feet. | | | | SPAN, 110 feet. | | | | SPAN, 110 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 200953 | | | 41 | 172684 | | | 1 | 203827 | | | 41 | 176017 | | |
| 2 | 197629 | | | 42 | 169443 | | | 2 | 200563 | | | 42 | 172726 | | |
| 3 | 194305 | | | 43 | 166202 | 2550000 | $p_7$ | 3 | 197300 | | | 43 | 169545 | 2550000 | $p_7$ |
| 4 | 190981 | 0 | $p_2$ | 44 | 162962 | | | 4 | 194036 | 0 | $p_2$ | 44 | 166362 | | |
| 5 | 187657 | | | 45 | 159861 | | | 5 | 190772 | | | 45 | 163181 | | |
| 6 | 184333 | | | | | | | 6 | 187509 | | | | | | |
| 7 | 181009 | | | | | | | 7 | 184245 | | | | | | |
| | | | | 46 | 172684 | | | | | | | 46 | 176017 | | |
| 8 | 194305 | | | 47 | 169443 | | | 8 | 197300 | | | 47 | 172726 | | |
| 9 | 190981 | | | 48 | 166202 | 3275000 | $p_8$ | 9 | 194036 | | | 48 | 169545 | 3275000 | $p_8$ |
| 10 | 187657 | | | 49 | 162962 | | | 10 | 190772 | | | 49 | 166362 | | |
| 11 | 184333 | 125000 | $p_3$ | | | | | 11 | 187509 | 125000 | $p_3$ | | | | |
| 12 | 181009 | | | | | | | 12 | 184245 | | | | | | |
| 13 | 177685 | | | 50 | 175925 | 4075000 | $p_9$ | 13 | 180981 | | | 50 | 179308 | 4075000 | $p_9$ |
| | | | | 51 | 172684 | | | | | | | 51 | 176017 | | |
| 14 | 189333 | | | | | | | 14 | 192581 | | | | | | |
| 15 | 185981 | | | | | | | 15 | 189181 | | | | | | |
| 16 | 182629 | | | 52 | 184333 | | | 16 | 185890 | | | 52 | 187509 | | |
| 17 | 179277 | | | 53 | 181009 | 4840000 | $p_{10}$ | 17 | 182599 | | | 53 | 184245 | 4840000 | $p_{10}$ |
| 18 | 175925 | 320000 | $p_3$ | 54 | 177685 | | | 18 | 179308 | 320000 | $p_3$ | 54 | 180981 | | |
| 19 | 172684 | | | | | | | 19 | 176017 | | | | | | |
| | | | | | | | | | | | | 55 | 203827 | 6240000 | $p_{11}$ |
| 20 | 185981 | | | | | | | 20 | 189181 | | | | | | |
| 21 | 182629 | | | | | | | 21 | 185890 | | | | | | |
| 22 | 179277 | | | | | | | 22 | 182599 | | | | | | |
| 23 | 175925 | 645000 | $p_4$ | | | | | 23 | 179308 | 645000 | $p_4$ | | | | |
| 24 | 172684 | | | | | | | 24 | 176017 | | | | | | |
| 25 | 169443 | | | | | | | 25 | 172726 | | | | | | |
| 26 | 166202 | | | | | | | 26 | 169545 | | | | | | |
| 27 | 162962 | | | | | | | 27 | 166362 | | | | | | |
| 28 | 175925 | | | | | | | 28 | 179308 | | | | | | |
| 29 | 172684 | | | | | | | 29 | 176017 | | | | | | |
| 30 | 169443 | | | | | | | 30 | 172726 | | | | | | |
| 31 | 166202 | | | | | | | 31 | 169545 | | | | | | |
| 32 | 162962 | 1095000 | $p_5$ | | | | | 32 | 166362 | 1095000 | $p_5$ | | | | |
| 33 | 159861 | | | | | | | 33 | 163181 | | | | | | |
| 34 | 156759 | | | | | | | 34 | 160000 | | | | | | |
| 35 | 153657 | | | | | | | 35 | 156953 | | | | | | |
| 36 | 150556 | | | | | | | 36 | 153908 | | | | | | |
| 37 | 169443 | | | | | | | 37 | 172726 | | | | | | |
| 38 | 166202 | | | | | | | 38 | 169545 | | | | | | |
| 39 | 162962 | 1900000 | $p_6$ | | | | | 39 | 166362 | 1900000 | $p_6$ | | | | |
| 40 | 159861 | | | | | | | 40 | 163181 | | | | | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 113 feet. | | | | SPAN, 113 feet. | | | | SPAN, 115 feet. | | | | SPAN, 115 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 208159 | 0 | $p_2$ | 41 | 180957 | 2550000 | $p_7$ | 1 | 210991 | 0 | $p_2$ | 37 | 180956 | 1900000 | $p_6$ |
| 2 | 204876 | | | 42 | 177753 | | | 2 | 207765 | | | 38 | 177809 | | |
| 3 | 201592 | | | 43 | 174550 | | | 3 | 204539 | | | 39 | 174660 | | |
| 4 | 198415 | | | 44 | 171346 | | | 4 | 201313 | | | 40 | 171512 | | |
| 5 | 195238 | | | 45 | 168144 | | | 5 | 198086 | | | 41 | 168364 | | |
| 6 | 192061 | | | | | | | 6 | 194965 | | | | | | |
| 7 | 188884 | | | | | | | 7 | 191843 | | | | | | |
| 8 | 201592 | 125000 | $p_3$ | 46 | 180957 | 3275000 | $p_8$ | 8 | 204539 | 125000 | $p_3$ | 42 | 180956 | 2550000 | $p_7$ |
| 9 | 198415 | | | 47 | 177753 | | | 9 | 201313 | | | 43 | 177809 | | |
| 10 | 195238 | | | 48 | 174550 | | | 10 | 198086 | | | 44 | 174660 | | |
| 11 | 192061 | | | 49 | 171346 | | | 11 | 194965 | | | 45 | 171512 | | |
| 12 | 188884 | | | | | | | 12 | 191843 | | | | | | |
| 13 | 185707 | | | 50 | 184160 | 4075000 | $p_9$ | 13 | 188721 | | | 46 | 184207 | 3275000 | $p_8$ |
| | | | | 51 | 180957 | | | | | | | 47 | 180956 | | |
| 14 | 197397 | 320000 | $p_3$ | 52 | 177753 | | | 14 | 200468 | 320000 | $p_3$ | 48 | 177809 | | |
| 15 | 194088 | | | 53 | 174550 | | | 15 | 197217 | | | 49 | 174660 | | |
| 16 | 190778 | | | | | | | 16 | 193964 | | | 50 | 171512 | | |
| 17 | 187470 | | | 54 | 185707 | 4840000 | $p_{10}$ | 17 | 190712 | | | 51 | 184207 | 4075000 | $p_9$ |
| 18 | 184160 | | | | | | | 18 | 187460 | | | 52 | 180956 | | |
| 19 | 180957 | | | | | | | 19 | 184207 | | | 53 | 177809 | | |
| | | | | | | | | | | | | 54 | 174660 | | |
| 20 | 194088 | 645000 | $p_4$ | 55 | 208159 | 6240000 | $p_{11}$ | 20 | 197217 | 645000 | $p_4$ | 55 | 200468 | 5650000 | $p_{10}$ |
| 21 | 190778 | | | 56 | 204876 | | | 21 | 193964 | | | | | | |
| 22 | 187470 | | | 57 | 201592 | | | 22 | 190712 | | | | | | |
| 23 | 184160 | | | | | | | 23 | 187460 | | | | | | |
| 24 | 180957 | | | | | | | 24 | 184207 | | | | | | |
| 25 | 177753 | | | | | | | 25 | 180956 | | | | | | |
| 26 | 174550 | | | | | | | 26 | 177809 | | | | | | |
| 27 | 171346 | | | | | | | 27 | 174660 | | | 56 | 207765 | 6240000 | $p_{11}$ |
| 28 | 168144 | | | | | | | 28 | 171512 | | | 57 | 204539 | | |
| | | | | | | | | | | | | 58 | 201313 | | |
| 29 | 180957 | 1095000 | $p_5$ | | | | | 29 | 184207 | 1095000 | $p_5$ | | | | |
| 30 | 177753 | | | | | | | 30 | 180956 | | | | | | |
| 31 | 174550 | | | | | | | 31 | 177809 | | | | | | |
| 32 | 171346 | | | | | | | 32 | 174660 | | | | | | |
| 33 | 168144 | | | | | | | 33 | 171512 | | | | | | |
| 34 | 165046 | | | | | | | 34 | 168364 | | | | | | |
| 35 | 161949 | | | | | | | 35 | 165216 | | | | | | |
| 36 | 158852 | | | | | | | 36 | 162172 | | | | | | |
| 37 | 177753 | 1900000 | $p_6$ | | | | | | | | | | | | |
| 38 | 174550 | | | | | | | | | | | | | | |
| 39 | 171346 | | | | | | | | | | | | | | |
| 40 | 168144 | | | | | | | | | | | | | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 120 feet. | | | | SPAN, 120 feet. | | | | SPAN, 125 feet. | | | | SPAN, 125 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 218058 | | | 38 | 185883 | | | 1 | 225040 | | | 40 | 187424 | | |
| 2 | 214866 | | | 39 | 182766 | 1900000 | $p_6$ | 2 | 221880 | | | 41 | 184432 | 1900000 | $p_6$ |
| 3 | 211675 | | | 40 | 179650 | | | 3 | 218720 | | | 42 | 181440 | | |
| 4 | 208483 | 0 | $p_2$ | 41 | 176533 | | | 4 | 215560 | 0 | $p_2$ | 43 | 178448 | | |
| 5 | 205291 | | | | | | | 5 | 212400 | | | | | | |
| 6 | 202200 | | | 42 | 189000 | | | 6 | 209336 | | | 44 | 190416 | | |
| 7 | 199108 | | | 43 | 185883 | | | 7 | 206272 | | | 45 | 187424 | | |
| | | | | 44 | 182766 | 2550000 | $p_7$ | 8 | 203208 | | | 46 | 184432 | 2550000 | $p_7$ |
| 8 | 211675 | | | 45 | 179650 | | | | | | | 47 | 181440 | | |
| 9 | 208483 | | | 46 | 176533 | | | | | | | 48 | 178448 | | |
| 10 | 205291 | 125000 | $p_3$ | | | | | 9 | 215024 | 120000 | $p_2$ | | | | |
| 11 | 202200 | | | 47 | 189000 | | | | | | | 49 | 190416 | | |
| 12 | 199108 | | | 48 | 185883 | | | 10 | 212400 | | | 50 | 187424 | | |
| 13 | 196016 | | | 49 | 182766 | 3275000 | $p_8$ | 11 | 209336 | 125000 | $p_3$ | 51 | 184432 | 3275000 | $p_8$ |
| | | | | 50 | 179650 | | | 12 | 206272 | | | 52 | 181440 | | |
| 14 | 207800 | | | 51 | 176533 | | | 13 | 203208 | | | 53 | 178448 | | |
| 15 | 204583 | | | | | | | | | | | | | | |
| 16 | 201466 | | | 52 | 189000 | | | | | | | 54 | 190416 | | |
| 17 | 198350 | 320000 | $p_3$ | 53 | 185883 | | | 14 | 215024 | | | 55 | 187424 | | |
| 18 | 195233 | | | 54 | 182766 | 4075000 | $p_9$ | 15 | 211840 | | | 56 | 184432 | 4075000 | $p_9$ |
| 19 | 192116 | | | 55 | 179650 | | | 16 | 208752 | | | 57 | 181440 | | |
| 20 | 189000 | | | 56 | 176533 | | | 17 | 205664 | | | | | | |
| | | | | | | | | 18 | 202576 | | | | | | |
| 21 | 201466 | | | | | | | 19 | 199488 | | | 58 | 205664 | | |
| 22 | 198350 | | | 57 | 201466 | | | 20 | 196400 | | | 59 | 202576 | | |
| 23 | 195233 | 645000 | $p_4$ | 58 | 198350 | 5650000 | $p_{10}$ | 21 | 193408 | 320000 | $p_3$ | 60 | 199488 | 5650000 | $p_{10}$ |
| 24 | 192116 | | | | | | | | | | | | | | |
| 25 | 189000 | | | | | | | 22 | 205664 | | | | | | |
| 26 | 185883 | | | | | | | 23 | 202576 | | | 61 | 206272 | | |
| 27 | 182766 | | | 59 | 205291 | | | 24 | 199488 | | | 62 | 203208 | 6240000 | $p_{11}$ |
| 28 | 179650 | | | 60 | 202200 | 6240000 | $p_{11}$ | 25 | 196400 | | | | | | |
| | | | | | | | | 26 | 193408 | | | | | | |
| 29 | 192116 | | | | | | | 27 | 190416 | 645000 | $p_4$ | | | | |
| 30 | 189000 | | | | | | | 28 | 187424 | | | | | | |
| 31 | 185883 | | | | | | | 29 | 184432 | | | | | | |
| 32 | 182766 | | | | | | | 30 | 181440 | | | 63 | 215024 | 7170000 | $p_{11}$ |
| 33 | 179650 | 1095000 | $p_5$ | | | | | | | | | | | | |
| 34 | 176533 | | | | | | | | | | | | | | |
| 35 | 173416 | | | | | | | 31 | 193408 | | | | | | |
| 36 | 170389 | | | | | | | 32 | 190416 | | | | | | |
| 37 | 167372 | | | | | | | 33 | 187424 | | | | | | |
| | | | | | | | | 34 | 184432 | | | | | | |
| | | | | | | | | 35 | 181440 | | | | | | |
| | | | | | | | | 36 | 178448 | 1095000 | $p_5$ | | | | |
| | | | | | | | | 37 | 175456 | | | | | | |
| | | | | | | | | 38 | 172464 | | | | | | |
| | | | | | | | | 39 | 169472 | | | | | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 130 feet. | | | | SPAN, 130 feet. | | | | SPAN, 135 feet. | | | | SPAN, 135 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 231946 | | | 40 | 194783 | | | 1 | 238429 | | | 40 | 202042 | | |
| 2 | 228815 | | | 41 | 191813 | | | 2 | 235414 | | | 41 | 199094 | | |
| 3 | 225684 | | | 42 | 188844 | 1900000 | $p_6$ | 3 | 232400 | | | 42 | 196146 | 1900000 | $p_6$ |
| 4 | 222553 | 0 | $p_2$ | 43 | 185968 | | | 4 | 229385 | 0 | $p_2$ | 43 | 193287 | | |
| 5 | 219422 | | | 44 | 183090 | | | 5 | 226370 | | | 44 | 190428 | | |
| 6 | 216383 | | | | | | | 6 | 223354 | | | 45 | 187568 | | |
| 7 | 213345 | | | 45 | 194783 | | | 7 | 220339 | | | | | | |
| 8 | 210306 | | | 46 | 191813 | | | 8 | 217324 | | | 46 | 199094 | | |
| | | | | 47 | 188844 | 2550000 | $p_7$ | | | | | 47 | 196146 | 2550000 | $p_7$ |
| 9 | 222152 | | | 48 | 185968 | | | 9 | 228498 | | | 48 | 193287 | | |
| 10 | 218998 | 120000 | $p_2$ | 49 | 183090 | | | 10 | 226072 | 120000 | $p_2$ | 49 | 190428 | | |
| 11 | 215936 | | | | | | | 11 | 223035 | | | 50 | 187568 | | |
| | | | | 50 | 194783 | | | 12 | 219998 | | | | | | |
| 12 | 213345 | | | 51 | 191813 | | | 13 | 216961 | | | 51 | 199094 | | |
| 13 | 210306 | 125000 | $p_3$ | 52 | 188844 | 3275000 | $p_8$ | | | | | 52 | 196146 | 3275000 | $p_8$ |
| | | | | 53 | 185968 | | | 14 | 228498 | | | 53 | 193287 | | |
| | | | | 54 | 183090 | | | 15 | 226072 | | | 54 | 190428 | | |
| 14 | 222152 | | | | | | | 16 | 223035 | | | 55 | 187568 | | |
| 15 | 218998 | | | 55 | 194783 | | | 17 | 219998 | | | | | | |
| 16 | 215936 | | | 56 | 191813 | | | 18 | 216961 | | | 56 | 199094 | | |
| 17 | 212875 | | | 57 | 188844 | 4075000 | $p_9$ | 19 | 213924 | | | 57 | 196146 | 4075000 | $p_9$ |
| 18 | 209814 | 320000 | $p_3$ | 58 | 185968 | | | 20 | 210887 | 320000 | $p_3$ | 58 | 193287 | | |
| 19 | 206752 | | | | | | | 21 | 207939 | | | 59 | 190428 | | |
| 20 | 203690 | | | | | | | | | | | | | | |
| 21 | 200721 | | | 59 | 209814 | | | 22 | 219998 | | | 60 | 213924 | | |
| | | | | 60 | 206752 | 5650000 | $p_{10}$ | 23 | 216961 | | | 61 | 210887 | 5650000 | $p_{10}$ |
| 22 | 212875 | | | 61 | 203690 | | | 24 | 213924 | | | 62 | 207939 | | |
| 23 | 209814 | | | | | | | 25 | 210887 | | | 63 | 204991 | | |
| 24 | 206752 | | | | | | | 26 | 207939 | 645000 | $p_4$ | | | | |
| 25 | 203690 | | | 62 | 210306 | 6240000 | $p_{11}$ | 27 | 204991 | | | | | | |
| 26 | 200721 | 645000 | $p_4$ | | | | | 28 | 202042 | | | 64 | 226072 | | |
| 27 | 197752 | | | | | | | 29 | 199094 | | | 65 | 223035 | | |
| 28 | 194783 | | | | | | | 30 | 196146 | | | 66 | 219998 | 7170000 | $p_{11}$ |
| 29 | 191813 | | | | | | | | | | | 67 | 216961 | | |
| 30 | 188844 | | | 63 | 222152 | | | 31 | 207939 | | | 68 | 213924 | | |
| | | | | 64 | 218998 | 7170000 | $p_{11}$ | 32 | 204991 | | | | | | |
| 31 | 200721 | | | 65 | 215936 | | | 33 | 202042 | | | | | | |
| 32 | 197752 | | | | | | | 34 | 199094 | | | | | | |
| 33 | 194783 | | | | | | | 35 | 196146 | 1095000 | $p_5$ | | | | |
| 34 | 191813 | | | | | | | 36 | 193287 | | | | | | |
| 35 | 188844 | 1095000 | $p_5$ | | | | | 37 | 190428 | | | | | | |
| 36 | 185968 | | | | | | | 38 | 187568 | | | | | | |
| 37 | 183090 | | | | | | | 39 | 184708 | | | | | | |
| 38 | 180214 | | | | | | | | | | | | | | |
| 39 | 177326 | | | | | | | | | | | | | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 140 feet. | | | | SPAN, 140 feet. | | | | SPAN, 145 feet. | | | | SPAN, 145 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 244792 | | | 41 | 206285 | | | 1 | 251131 | | | 41 | 213391 | | |
| 2 | 241800 | | | 42 | 203356 | 1900000 | | 2 | 248158 | | | 42 | 210481 | 1900000 | |
| 3 | 238807 | | | 43 | 200514 | | $p_6$ | 3 | 245186 | | | 43 | 207653 | | $p_6$ |
| 4 | 235814 | 0 | $p_2$ | 44 | 197671 | | | 4 | 242213 | 0 | $p_2$ | 44 | 204825 | | |
| 5 | 232821 | | | 45 | 194827 | | | 5 | 239241 | | | 45 | 201998 | | |
| 6 | 229914 | | | | | | | 6 | 236351 | | | | | | |
| 7 | 227007 | | | 46 | 206285 | | | 7 | 233461 | | | 46 | 213391 | | |
| 8 | 224100 | | | 47 | 203356 | | | 8 | 230571 | | | 47 | 210481 | | |
| | | | | 48 | 200514 | 2550000 | $p_7$ | | | | | 48 | 207653 | 2550000 | $p_7$ |
| 9 | 236084 | | | 49 | 197671 | | | 9 | 242578 | | | 49 | 204825 | | |
| 10 | 233070 | 120000 | | 50 | 194827 | | | 10 | 239585 | 120000 | | 50 | 201998 | | |
| 11 | 230056 | | $p_2$ | | | | | 11 | 236674 | | $p_2$ | | | | |
| 12 | 227042 | | | 51 | 206285 | | | 12 | 233764 | | | 51 | 213391 | | |
| 13 | 224028 | | | 52 | 203356 | | | 13 | 230853 | | | 52 | 210481 | | |
| | | | | 53 | 200514 | 3275000 | $p_8$ | | | | | 53 | 207653 | 3275000 | $p_8$ |
| 14 | 236084 | | | 54 | 197671 | | | 14 | 242578 | | | 54 | 204825 | | |
| 15 | 233070 | | | 55 | 194827 | | | 15 | 239585 | | | 55 | 201998 | | |
| 16 | 230056 | | | | | | | 16 | 236674 | | | 56 | 199170 | | |
| 17 | 227042 | 320000 | | 56 | 206285 | | | 17 | 233764 | 320000 | | | | | |
| 18 | 224028 | | $p_3$ | 57 | 203356 | | | 18 | 230853 | | $p_3$ | 57 | 210481 | | |
| 19 | 221014 | | | 58 | 200514 | 4075000 | $p_9$ | 19 | 227943 | | | 58 | 207653 | 4075000 | $p_9$ |
| 20 | 218000 | | | 59 | 197671 | | | 20 | 225032 | | | 59 | 204825 | | |
| 21 | 215070 | | | 60 | 194827 | | | 21 | 222122 | | | 60 | 201998 | | |
| | | | | | | | | 22 | 219211 | | | | | | |
| 22 | 227042 | | | | | | | | | | | | | | |
| 23 | 224028 | | | 61 | 218000 | | | 23 | 230853 | | | 61 | 225032 | | |
| 24 | 221014 | | | 62 | 215070 | 5650000 | $p_{10}$ | 24 | 227943 | | | 62 | 222122 | | |
| 25 | 218000 | 645000 | | 63 | 212142 | | | 25 | 225032 | 645000 | | 63 | 219211 | 5650000 | $p_{10}$ |
| 26 | 215070 | | $p_4$ | | | | | 26 | 222122 | | $p_4$ | 64 | 216301 | | |
| 27 | 212142 | | | 64 | 233070 | | | 27 | 219211 | | | 65 | 213391 | | |
| 28 | 209213 | | | 65 | 230056 | | | 28 | 216301 | | | | | | |
| 29 | 206285 | | | 66 | 227042 | | | 29 | 213391 | | | 66 | 233764 | | |
| 30 | 203356 | | | 67 | 224028 | 7170000 | $p_{11}$ | 30 | 210481 | | | 67 | 230853 | | |
| | | | | 68 | 221014 | | | 31 | 207653 | | | 68 | 227943 | | |
| 31 | 215070 | | | 69 | 218000 | | | | | | | 69 | 225032 | 7170000 | $p_{11}$ |
| 32 | 212142 | | | 70 | 215070 | | | 32 | 219211 | | | 70 | 222122 | | |
| 33 | 209213 | | | | | | | 33 | 216301 | | | 71 | 219211 | | |
| 34 | 206285 | | | | | | | 34 | 213391 | | | 72 | 216301 | | |
| 35 | 203356 | 1095000 | | | | | | 35 | 210481 | 1095000 | | 73 | 213391 | | |
| 36 | 200514 | | $p_5$ | | | | | 36 | 207653 | | $p_5$ | | | | |
| 37 | 197671 | | | | | | | 37 | 204825 | | | | | | |
| 38 | 194827 | | | | | | | 38 | 201998 | | | | | | |
| 39 | 191985 | | | | | | | 39 | 199170 | | | | | | |
| 40 | 189142 | | | | | | | 40 | 196343 | | | | | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 150 feet. | | | | SPAN, 150 feet. | | | | SPAN, 155 feet. | | | | SPAN, 155 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 257446 | | | 42 | 217533 | | | 1 | 263741 | | | 43 | 221403 | | |
| 2 | 254493 | | | 43 | 214720 | | | 2 | 260806 | | | 44 | 218681 | | |
| 3 | 251540 | | | 44 | 211906 | 1900000 | $p_6$ | 3 | 257870 | | | 45 | 215958 | 1900000 | $p_6$ |
| 4 | 248586 | 0 | $p_2$ | 45 | 209093 | | | 4 | 254935 | 0 | $p_2$ | 46 | 213236 | | |
| 5 | 245633 | | | 46 | 206280 | | | 5 | 252000 | | | 47 | 210515 | | |
| 6 | 242760 | | | | | | | 6 | 249141 | | | | | | |
| 7 | 239866 | | | | | | | 7 | 246283 | | | | | | |
| 8 | 237013 | | | 47 | 217533 | | | 8 | 243425 | | | 48 | 221403 | | |
| | | | | 48 | 214720 | | | | | | | 49 | 218681 | | |
| 9 | 249040 | | | 49 | 211906 | 2550000 | $p_7$ | 9 | 255470 | | | 50 | 215958 | 2550000 | $p_7$ |
| 10 | 246066 | | | 50 | 209093 | | | 10 | 252515 | | | 51 | 213236 | | |
| 11 | 243173 | 120000 | $p_2$ | 51 | 206280 | | | 11 | 249638 | 120000 | $p_2$ | 52 | 210515 | | |
| 12 | 240280 | | | | | | | 12 | 246761 | | | 53 | 207793 | | |
| 13 | 237386 | | | 52 | 217533 | | | 13 | 243883 | | | | | | |
| | | | | 53 | 214720 | | | | | | | 54 | 218681 | | |
| 14 | 249040 | | | 54 | 211906 | 3275000 | $p_8$ | 14 | 255470 | | | 55 | 215958 | 3275000 | $p_8$ |
| 15 | 246066 | | | 55 | 209093 | | | 15 | 252515 | | | 56 | 213236 | | |
| 16 | 243173 | | | 56 | 206280 | | | 16 | 249638 | | | 57 | 210515 | | |
| 17 | 240280 | | | | | | | 17 | 246761 | | | 58 | 207793 | | |
| 18 | 237386 | 320000 | $p_3$ | 57 | 217533 | | | 18 | 243883 | 320000 | $p_3$ | | | | |
| 19 | 234493 | | | 58 | 214720 | | | 19 | 241006 | | | 59 | 218681 | | |
| 20 | 231600 | | | 59 | 211906 | 4075000 | $p_9$ | 20 | 238128 | | | 60 | 215958 | 4075000 | $p_9$ |
| 21 | 228786 | | | 60 | 209093 | | | 21 | 235328 | | | 61 | 213236 | | |
| 22 | 225973 | | | 61 | 206280 | | | 22 | 232528 | | | 62 | 210515 | | |
| | | | | 62 | 203466 | | | | | | | 63 | 207793 | | |
| 23 | 237386 | | | | | | | 23 | 243883 | | | | | | |
| 24 | 234493 | | | 63 | 225973 | | | 24 | 241006 | | | 64 | 229727 | | |
| 25 | 231600 | | | 64 | 223160 | | | 25 | 238128 | | | 65 | 226926 | | |
| 26 | 228786 | | | 65 | 220346 | 5650000 | $p_{10}$ | 26 | 235328 | | | 66 | 224126 | 5650000 | $p_{10}$ |
| 27 | 225973 | 645000 | $p_4$ | 66 | 217533 | | | 27 | 232528 | 645000 | $p_4$ | 67 | 221403 | | |
| 28 | 223160 | | | 67 | 214720 | | | 28 | 229727 | | | 68 | 218681 | | |
| 29 | 220346 | | | | | | | 29 | 226926 | | | | | | |
| 30 | 217533 | | | | | | | 30 | 224126 | | | | | | |
| 31 | 214720 | | | | | | | 31 | 221403 | | | | | | |
| | | | | 68 | 234493 | | | 32 | 218681 | | | 69 | 238128 | | |
| | | | | 69 | 231600 | | | | | | | 70 | 235328 | | |
| | | | | 70 | 228786 | | | | | | | 71 | 232528 | | |
| 32 | 225973 | | | 71 | 225973 | | | | | | | 72 | 229727 | | |
| 33 | 223160 | | | 72 | 223160 | 7170000 | $p_{11}$ | 33 | 229727 | | | 73 | 226926 | 7170000 | $p_{11}$ |
| 34 | 220346 | | | 73 | 220346 | | | 34 | 226926 | | | 74 | 224126 | | |
| 35 | 217533 | | | 74 | 217533 | | | 35 | 224126 | | | 75 | 221403 | | |
| 36 | 214720 | | | 75 | 214720 | | | 36 | 221403 | | | 76 | 218681 | | |
| 37 | 211906 | 1095000 | $p_5$ | | | | | 37 | 218681 | 1095000 | $p_5$ | 77 | 215958 | | |
| 38 | 209093 | | | | | | | 38 | 215958 | | | 78 | 213236 | | |
| 39 | 206280 | | | | | | | 39 | 213236 | | | | | | |
| 40 | 203466 | | | | | | | 40 | 210515 | | | | | | |
| 41 | 200733 | | | | | | | 41 | 207793 | | | | | | |
| | | | | | | | | 42 | 205070 | | | | | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 160 feet. | | | | SPAN, 160 feet. | | | | SPAN, 160 feet. | | | | SPAN, 165 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 269725 | | | 39 | 219829 | | | 75 | 227967 | | | 1 | 275624 | | |
| 2 | 266881 | | | 40 | 217116 | 1095000 | $p_3$ | 76 | 225254 | 7170000 | | 2 | 272793 | | |
| 3 | 264037 | | | 41 | 214486 | | | 77 | 222541 | | $p_{11}$ | 3 | 269963 | | |
| 4 | 261193 | 0 | $p_2$ | 42 | 211849 | | | 78 | 219829 | | | 4 | 267133 | | |
| 5 | 258350 | | | | | | | 79 | 217116 | | | 5 | 264303 | 0 | $p_2$ |
| 6 | 255506 | | | 43 | 227967 | | | | | | | 6 | 261545 | | |
| 7 | 252662 | | | 44 | 225254 | | | | | | | 7 | 258787 | | |
| 8 | 249818 | | | 45 | 222541 | 1900000 | $p_6$ | | | | | 8 | 256030 | | |
| | | | | 46 | 219829 | | | 80 | 227967 | 8245000 | $p_{12}$ | | | | |
| 9 | 261880 | | | 47 | 217116 | | | | | | | 9 | 268181 | | |
| 10 | 258942 | 120000 | | 48 | 214486 | | | | | | | 10 | 265333 | | |
| 11 | 256079 | | $p_2$ | | | | | | | | | 11 | 262484 | 120000 | $p_2$ |
| 12 | 253197 | | | 49 | 225254 | | | | | | | 12 | 259636 | | |
| 13 | 250354 | | | 50 | 222541 | | | | | | | 13 | 256787 | | |
| | | | | 51 | 219829 | 2550000 | $p_7$ | | | | | 14 | 253938 | | |
| 14 | 261880 | | | 52 | 217116 | | | | | | | | | | |
| 15 | 258942 | | | 53 | 214486 | | | | | | | 15 | 265333 | | |
| 16 | 256079 | | | 54 | 211849 | | | | | | | 16 | 262484 | | |
| 17 | 253197 | | | | | | | | | | | 17 | 259636 | | |
| 18 | 250354 | 320000 | $p_3$ | 55 | 222541 | | | | | | | 18 | 256787 | | |
| 19 | 247491 | | | 56 | 219829 | | | | | | | 19 | 253938 | 320000 | $p_3$ |
| 20 | 244628 | | | 57 | 217116 | 3275000 | $p_8$ | | | | | 20 | 251089 | | |
| 21 | 241840 | | | 58 | 214486 | | | | | | | 21 | 248313 | | |
| 22 | 239053 | | | 59 | 211849 | | | | | | | 22 | 245537 | | |
| 23 | 236255 | | | 60 | 209212 | | | | | | | 23 | 242761 | | |
| | | | | | | | | | | | | | | | |
| 24 | 247491 | | | 61 | 219829 | | | | | | | 24 | 253938 | | |
| 25 | 244628 | | | 62 | 217116 | | | | | | | 25 | 251089 | | |
| 26 | 241840 | | | 63 | 214486 | 4075000 | $p_9$ | | | | | 26 | 248313 | | |
| 27 | 239053 | 645000 | | 64 | 211849 | | | | | | | 27 | 245537 | | |
| 28 | 236255 | | $p_4$ | | | | | | | | | 28 | 242761 | 645000 | $p_4$ |
| 29 | 233467 | | | 65 | 233467 | | | | | | | 29 | 239986 | | |
| 30 | 230680 | | | 66 | 230680 | | | | | | | 30 | 237211 | | |
| 31 | 227967 | | | 67 | 227967 | 5650000 | $p_{10}$ | | | | | 31 | 234507 | | |
| 32 | 225254 | | | 68 | 225254 | | | | | | | 32 | 231804 | | |
| | | | | | | | | | | | | | | | |
| 33 | 236255 | | | 69 | 244628 | | | | | | | 33 | 242761 | | |
| 34 | 233467 | 1095000 | | 70 | 241840 | | | | | | | 34 | 239986 | | |
| 35 | 230680 | | $p_5$ | 71 | 239053 | 7170000 | $p_{11}$ | | | | | 35 | 237211 | 1095000 | $p_5$ |
| 36 | 227967 | | | 72 | 236255 | | | | | | | 36 | 234507 | | |
| 37 | 225254 | | | 73 | 233467 | | | | | | | 37 | 231804 | | |
| 38 | 222541 | | | 74 | 230680 | | | | | | | 38 | 229101 | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 165 feet. | | | | SPAN, 165 feet. | | | | SPAN, 170 feet. | | | | SPAN, 170 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 39 | 226397 | 1095000 | $p_5$ | 76 | 231804 | 7170000 | $p_{11}$ | 1 | 281535 | 0 | $p_2$ | 40 | 230235 | 1095000 | $p_5$ |
| 40 | 223696 | | | 77 | 229101 | | | 2 | 278717 | | | 41 | 227611 | | |
| 41 | 221072 | | | 78 | 226397 | | | 3 | 275900 | | | 42 | 224987 | | |
| 42 | 218447 | | | 79 | 223696 | | | 4 | 273082 | | | 43 | 222364 | | |
| 43 | 215823 | | | 80 | 221072 | | | 5 | 270264 | | | | | | |
| 44 | 231804 | 1900000 | $p_6$ | 81 | 231804 | 8245000 | $p_{12}$ | 6 | 267517 | | | 44 | 238217 | 1900000 | $p_6$ |
| 45 | 229101 | | | 82 | 229101 | | | 7 | 264770 | | | 45 | 235624 | | |
| 46 | 226397 | | | 83 | 226397 | | | 8 | 262023 | | | 46 | 232929 | | |
| 47 | 223696 | | | | | | | 9 | 274188 | 120000 | $p_2$ | 47 | 230235 | | |
| 48 | 221072 | | | | | | | 10 | 271353 | | | 48 | 227611 | | |
| 49 | 231804 | 2550000 | $p_7$ | | | | | 11 | 268687 | | | 49 | 238317 | 2550000 | $p_7$ |
| 50 | 229101 | | | | | | | 12 | 265823 | | | 50 | 235624 | | |
| 51 | 226397 | | | | | | | 13 | 263059 | | | 51 | 232929 | | |
| 52 | 223696 | | | | | | | 14 | 260294 | | | 52 | 230235 | | |
| 53 | 221072 | | | | | | | | | | | 53 | 227611 | | |
| 54 | 218447 | | | | | | | 15 | 271353 | 320000 | $p_3$ | 54 | 224987 | | |
| 55 | 229101 | 3275000 | $p_8$ | | | | | 16 | 268687 | | | 55 | 235624 | 3275000 | $p_8$ |
| 56 | 226397 | | | | | | | 17 | 265823 | | | 56 | 232929 | | |
| 57 | 223696 | | | | | | | 18 | 263059 | | | 57 | 230235 | | |
| 58 | 221072 | | | | | | | 19 | 260294 | | | 58 | 227611 | | |
| 59 | 218447 | | | | | | | 20 | 257529 | | | 59 | 224987 | | |
| 60 | 215823 | | | | | | | 21 | 254764 | | | 60 | 222364 | | |
| 61 | 226397 | 4075000 | $p_9$ | | | | | 22 | 252000 | | | 61 | 232929 | 4075000 | $p_9$ |
| 62 | 223696 | | | | | | | 23 | 249235 | | | 62 | 230235 | | |
| 63 | 221072 | | | | | | | | | | | 63 | 227611 | | |
| 64 | 218447 | | | | | | | 24 | 260294 | 645000 | $p_4$ | 64 | 224987 | | |
| 65 | 215823 | | | | | | | 25 | 257529 | | | 65 | 222364 | | |
| 66 | 237211 | 5650000 | $p_{10}$ | | | | | 26 | 254764 | | | 66 | 243705 | 5650000 | $p_{10}$ |
| 67 | 234507 | | | | | | | 27 | 252000 | | | 67 | 241010 | | |
| 68 | 231804 | | | | | | | 28 | 249235 | | | 68 | 238317 | | |
| 69 | 229101 | | | | | | | 29 | 246470 | | | 69 | 235624 | | |
| 70 | 248313 | 7170000 | $p_{11}$ | | | | | 30 | 243705 | | | 70 | 254764 | 7170000 | $p_{11}$ |
| 71 | 245537 | | | | | | | 31 | 241010 | | | 71 | 252000 | | |
| 72 | 242761 | | | | | | | 32 | 238317 | | | 72 | 249235 | | |
| 73 | 239986 | | | | | | | 33 | 235624 | | | 73 | 246470 | | |
| 74 | 237211 | | | | | | | | | | | 74 | 243705 | | |
| 75 | 234507 | | | | | | | 34 | 246470 | 1095000 | $p_5$ | 75 | 241010 | | |
| | | | | | | | | 35 | 243705 | | | 76 | 238317 | | |
| | | | | | | | | 36 | 241010 | | | | | | |
| | | | | | | | | 37 | 238317 | | | | | | |
| | | | | | | | | 38 | 235624 | | | | | | |
| | | | | | | | | 39 | 232929 | | | | | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 170 feet. | | | | SPAN, 175 feet. | | | | SPAN, 175 feet. | | | | SPAN, 175 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 77 | 235624 | 7170000 | $p_{11}$ | 1 | 287451 | 0 | $p_2$ | 42 | 231508 | 1095000 | $p_5$ | 77 | 242114 | 7170000 | $p_{11}$ |
| 78 | 232930 | | | 2 | 284645 | | | 43 | 228890 | | | 78 | 239428 | | |
| 79 | 230235 | | | 3 | 281840 | | | | | | | 79 | 236742 | | |
| 80 | 227611 | | | 4 | 279034 | | | 44 | 244800 | 1900000 | $p_6$ | 80 | 234125 | | |
| 81 | 238317 | 8245000 | $p_{12}$ | 5 | 276228 | | | 45 | 242114 | | | 81 | 244800 | 8245000 | $p_{12}$ |
| 82 | 235624 | | | 6 | 273491 | | | 46 | 239428 | | | 82 | 242114 | | |
| 83 | 232929 | | | 7 | 270754 | | | 47 | 236742 | | | 83 | 239428 | | |
| 84 | 230235 | | | 8 | 268017 | | | 48 | 234125 | | | 84 | 236742 | | |
| 85 | 227611 | | | 9 | 280194 | 120000 | $p_3$ | 49 | 244800 | 2550000 | $p_7$ | 85 | 234125 | | |
| | | | | 10 | 277370 | | | 50 | 242114 | | | 86 | 231508 | | |
| | | | | 11 | 274616 | | | 51 | 239428 | | | 87 | 228890 | | |
| | | | | 12 | 271862 | | | 52 | 236742 | | | 88 | 226273 | | |
| | | | | 13 | 269108 | | | 53 | 234125 | | | | | | |
| | | | | 14 | 266353 | | | | | | | | | | |
| | | | | 15 | 277370 | 320000 | $p_3$ | 54 | 244800 | 3275000 | $p_8$ | | | | |
| | | | | 16 | 274616 | | | 55 | 242114 | | | | | | |
| | | | | 17 | 271862 | | | 56 | 239428 | | | | | | |
| | | | | 18 | 269108 | | | 57 | 236742 | | | | | | |
| | | | | 19 | 266353 | | | 58 | 234125 | | | | | | |
| | | | | 20 | 263600 | | | 59 | 231508 | | | | | | |
| | | | | 21 | 260914 | | | 60 | 228890 | | | | | | |
| | | | | 22 | 258228 | | | | | | | | | | |
| | | | | 23 | 255542 | | | | | | | | | | |
| | | | | 24 | 252857 | | | | | | | | | | |
| | | | | 25 | 263600 | 645000 | $p_4$ | 61 | 239428 | 4075000 | $p_9$ | | | | |
| | | | | 26 | 260914 | | | 62 | 236742 | | | | | | |
| | | | | 27 | 258228 | | | 63 | 234125 | | | | | | |
| | | | | 28 | 255542 | | | 64 | 231508 | | | | | | |
| | | | | 29 | 252857 | | | 65 | 228890 | | | | | | |
| | | | | 30 | 250171 | | | | | | | | | | |
| | | | | 31 | 247485 | | | | | | | | | | |
| | | | | 32 | 244800 | | | | | | | | | | |
| | | | | 33 | 242114 | | | | | | | | | | |
| | | | | 34 | 252857 | 1095000 | $p_5$ | 66 | 250171 | 5650000 | $p_{10}$ | | | | |
| | | | | 35 | 250171 | | | 67 | 247485 | | | | | | |
| | | | | 36 | 247485 | | | 68 | 244800 | | | | | | |
| | | | | 37 | 244800 | | | 69 | 242114 | | | | | | |
| | | | | 38 | 242114 | | | 70 | 239428 | | | | | | |
| | | | | 39 | 239428 | | | | | | | | | | |
| | | | | 40 | 236742 | | | | | | | | | | |
| | | | | 41 | 234125 | | | | | | | | | | |
| | | | | | | | | 71 | 258228 | 7170000 | $p_{11}$ | | | | |
| | | | | | | | | 72 | 255542 | | | | | | |
| | | | | | | | | 73 | 252857 | | | | | | |
| | | | | | | | | 74 | 250171 | | | | | | |
| | | | | | | | | 75 | 247485 | | | | | | |
| | | | | | | | | 76 | 244800 | | | | | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 180 feet. | | | | SPAN, 180 feet. | | | | SPAN, 180 feet. | | | | SPAN, 185 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 293372 | 0 | $p_2$ | 41 | 240610 | 1095000 | $p_5$ | 80 | 240610 | 7170000 | $p_{11}$ | 1 | 299037 | 0 | $p_2$ |
| 2 | 290577 | | | 42 | 238000 | | | 81 | 238000 | | | 2 | 296318 | | |
| 3 | 287783 | | | 43 | 235391 | | | 82 | 235391 | | | 3 | 293600 | | |
| 4 | 284988 | | | 44 | 232777 | | | | | | | 4 | 290881 | | |
| 5 | 282194 | | | | | | | | | | | 5 | 288162 | | |
| 6 | 279466 | | | 45 | 248444 | 1900000 | $p_6$ | 83 | 245833 | 8245000 | $p_{12}$ | 6 | 285443 | | |
| 7 | 276738 | | | 46 | 245833 | | | 84 | 243221 | | | 7 | 282724 | | |
| 8 | 274010 | | | 47 | 243221 | | | 85 | 240610 | | | 8 | 280005 | | |
| | | | | 48 | 240610 | | | 86 | 238000 | | | | | | |
| | | | | 49 | 238000 | | | 87 | 235391 | | | | | | |
| 9 | 286200 | 120000 | $p_2$ | | | | | 88 | 232777 | | | 9 | 292204 | 120000 | $p_2$ |
| 10 | 283388 | | | 50 | 248444 | 2550000 | $p_7$ | 89 | 230166 | | | 10 | 289404 | | |
| 11 | 280644 | | | 51 | 245833 | | | 90 | 227621 | | | 11 | 286669 | | |
| 12 | 277900 | | | 52 | 243221 | | | | | | | 12 | 283934 | | |
| 13 | 275155 | | | 53 | 240610 | | | | | | | 13 | 281120 | | |
| 14 | 272410 | | | 54 | 238000 | | | | | | | 14 | 278464 | | |
| | | | | 55 | 235391 | | | | | | | | | | |
| 15 | 283388 | | | | | | | | | | | 15 | 289404 | | |
| 16 | 280644 | | | 56 | 245833 | 3275000 | $p_8$ | | | | | 16 | 286669 | | |
| 17 | 277900 | | | 57 | 243221 | | | | | | | 17 | 283934 | | |
| 18 | 275155 | | | 58 | 240610 | | | | | | | 18 | 281120 | | |
| 19 | 272410 | 320000 | $p_3$ | 59 | 238000 | | | | | | | 19 | 278464 | 320000 | $p_3$ |
| 20 | 269665 | | | 60 | 235391 | | | | | | | 20 | 275729 | | |
| 21 | 266988 | | | | | | | | | | | 21 | 273058 | | |
| 22 | 264310 | | | 61 | 245833 | 4075000 | $p_9$ | | | | | 22 | 270388 | | |
| 23 | 261633 | | | 62 | 243221 | | | | | | | 23 | 267717 | | |
| 24 | 258955 | | | 63 | 240610 | | | | | | | 24 | 265047 | | |
| | | | | 64 | 238000 | | | | | | | | | | |
| 25 | 269665 | 645000 | $p_4$ | 65 | 235391 | | | | | | | 25 | 275729 | 645000 | $p_4$ |
| 26 | 266988 | | | 66 | 232777 | | | | | | | 26 | 273058 | | |
| 27 | 264310 | | | 67 | 230166 | | | | | | | 27 | 270388 | | |
| 28 | 261633 | | | | | | | | | | | 28 | 267717 | | |
| 29 | 258955 | | | 68 | 251055 | 5650000 | $p_{10}$ | | | | | 29 | 265047 | | |
| 30 | 256277 | | | 69 | 248444 | | | | | | | 30 | 262377 | | |
| 31 | 253655 | | | 70 | 245833 | | | | | | | 31 | 259770 | | |
| 32 | 251055 | | | 71 | 243221 | | | | | | | 32 | 257165 | | |
| 33 | 248444 | | | 72 | 240610 | | | | | | | 33 | 254560 | | |
| 34 | 245833 | | | | | | | | | | | 34 | 251955 | | |
| 35 | 256277 | 1095000 | $p_5$ | 73 | 258955 | 7170000 | $p_{11}$ | | | | | 35 | 262377 | 1095000 | $p_5$ |
| 36 | 253655 | | | 74 | 256277 | | | | | | | 36 | 259770 | | |
| 37 | 251055 | | | 75 | 253655 | | | | | | | 37 | 257165 | | |
| 38 | 248444 | | | 76 | 251055 | | | | | | | 38 | 254560 | | |
| 39 | 245833 | | | 77 | 248444 | | | | | | | 39 | 251955 | | |
| 40 | 243221 | | | 78 | 245833 | | | | | | | 40 | 249350 | | |
| | | | | 79 | 243221 | | | | | | | | | | |

For all values of $x$ below $x = 67$, a uniformly distributed load of 3000 lbs. per ft. will give greater moments than this table.

# MOMENTS.

$M_x = Rx - m.$

| Span, 185 feet. | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 190 feet. | | | | SPAN, 195 feet. | | | | SPAN, 195 feet. | | | | SPAN, 195 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 79 | 255469 | 7170000 | $p_{11}$ | 1 | 310297 | 0 | $p_2$ | 41 | 259056 | 1095000 | $p_5$ | 79 | 261589 | 7170000 | $p_{11}$ |
| 80 | 252932 | | | 2 | 307595 | | | 42 | 256522 | | | 80 | 259056 | | |
| 81 | 250396 | | | 3 | 304892 | | | 43 | 253989 | | | 81 | 256522 | | |
| 82 | 247859 | | | 4 | 302189 | | | 44 | 251455 | | | 82 | 253989 | | |
| 83 | 245322 | | | 5 | 299487 | | | 45 | 248922 | | | 83 | 251455 | | |
| 84 | 242785 | | | 6 | 296846 | | | | | | | 84 | 248922 | | |
| 85 | 240315 | | | 7 | 294205 | | | 46 | 264184 | 1900000 | $p_6$ | 85 | 246450 | | |
| | | | | 8 | 291564 | | | 47 | 261589 | | | | | | |
| 86 | 250396 | 8245000 | $p_{12}$ | | | | | 48 | 259056 | | | 86 | 256522 | 8245000 | $p_{12}$ |
| 87 | 247859 | | | 9 | 303846 | 120000 | $p_2$ | 49 | 256522 | | | 87 | 253989 | | |
| 88 | 245322 | | | 10 | 301128 | | | 50 | 253989 | | | 88 | 251455 | | |
| 89 | 242785 | | | 11 | 298471 | | | 51 | 251455 | | | 89 | 248922 | | |
| 90 | 240315 | | | 12 | 295815 | | | | | | | 90 | 246450 | | |
| 91 | 237841 | | | 13 | 293158 | | | 52 | 261589 | 2550000 | $p_7$ | 91 | 243978 | | |
| 92 | 235368 | | | 14 | 290502 | | | 53 | 259056 | | | 92 | 241506 | | |
| 93 | 232894 | | | 15 | 287845 | | | 54 | 256522 | | | 93 | 239035 | | |
| 94 | 230420 | | | | | | | 55 | 253989 | | | 94 | 236564 | | |
| 95 | 227946 | | | 16 | 298471 | 320000 | $p_3$ | 56 | 251455 | | | 95 | 234153 | | |
| | | | | 17 | 295815 | | | 57 | 248922 | | | 96 | 231743 | | |
| | For all values of $x$ below $x = 50$, a uniformly distributed load of 3000 lbs. per ft. will give greater moments than this table. | | | 18 | 293158 | | | | | | | 97 | 229333 | | |
| | | | | 19 | 290502 | | | 58 | 259056 | 3275000 | $p_8$ | 98 | 226923 | | |
| | | | | 20 | 287805 | | | 59 | 256522 | | | | | | |
| | | | | 21 | 285189 | | | 60 | 253989 | | | | For all values of $x$ below $x = 45$, a uniformly distributed load of 3000 lbs. per ft. gives greater moments than this table. | | |
| | | | | 22 | 282532 | | | 61 | 251455 | | | | | | |
| | | | | 23 | 279876 | | | 62 | 248922 | | | | | | |
| | | | | 24 | 277219 | | | | | | | | | | |
| | | | | 25 | 287845 | 645000 | $p_4$ | 63 | 259056 | 4075000 | $p_9$ | | | | |
| | | | | 26 | 285189 | | | 64 | 256522 | | | | | | |
| | | | | 27 | 282532 | | | 65 | 253989 | | | | | | |
| | | | | 28 | 279876 | | | 66 | 251455 | | | | | | |
| | | | | 29 | 277219 | | | 67 | 248922 | | | | | | |
| | | | | 30 | 274563 | | | 68 | 246450 | | | | | | |
| | | | | 31 | 271969 | | | | | | | | | | |
| | | | | 32 | 269374 | | | 69 | 266779 | 5650000 | $p_{10}$ | | | | |
| | | | | 33 | 266779 | | | 70 | 264184 | | | | | | |
| | | | | 34 | 264184 | | | 71 | 261589 | | | | | | |
| | | | | | | | | 72 | 259056 | | | | | | |
| | | | | 35 | 274563 | 1095000 | $p_5$ | 73 | 256522 | | | | | | |
| | | | | 36 | 271969 | | | | | | | | | | |
| | | | | 37 | 269374 | | | 74 | 274563 | 7170000 | $p_{11}$ | | | | |
| | | | | 38 | 266779 | | | 75 | 271964 | | | | | | |
| | | | | 39 | 264184 | | | 76 | 269374 | | | | | | |
| | | | | 40 | 261589 | | | 77 | 266779 | | | | | | |
| | | | | | | | | 78 | 264184 | | | | | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 200 feet. | | | | SPAN, 200 feet. | | | | SPAN, 200 feet. | | | | SPAN, 210 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 315955 | 0 | $f_2$ | 41 | 265170 | 1095000 | $f_5$ | 79 | 267700 | 7170000 | $f_{11}$ | 1 | 327090 | 0 | $f_2$ |
| 2 | 313260 | | | 42 | 262640 | | | 80 | 265170 | | | 2 | 324466 | | |
| 3 | 310565 | | | 43 | 260110 | | | 81 | 262640 | | | 3 | 321842 | | |
| 4 | 307870 | | | 44 | 257580 | | | 82 | 260110 | | | 4 | 319219 | | |
| 5 | 305175 | | | 45 | 255050 | | | 83 | 257580 | | | 5 | 316595 | | |
| 6 | 302540 | | | | | | | 84 | 255050 | | | 6 | 313971 | | |
| 7 | 299905 | | | 46 | 270290 | 1900000 | $f_6$ | 85 | 252580 | | | 7 | 311347 | | |
| 8 | 297270 | | | 47 | 267700 | | | | | | | 8 | 308723 | | |
| 9 | 309560 | 120000 | $f_2$ | 48 | 265170 | | | 86 | 262640 | 8245000 | $f_{12}$ | 9 | 321028 | 120000 | $f_2$ |
| 10 | 306850 | | | 49 | 262640 | | | 87 | 260110 | | | 10 | 318333 | | |
| 11 | 304200 | | | 50 | 260110 | | | 88 | 257580 | | | 11 | 315694 | | |
| 12 | 301550 | | | 51 | 257580 | | | 89 | 255050 | | | 12 | 313056 | | |
| 13 | 298900 | | | 52 | 267700 | 2550000 | $f_7$ | 90 | 252580 | | | 13 | 310418 | | |
| 14 | 296250 | | | 53 | 265170 | | | 91 | 250110 | | | 14 | 307780 | | |
| 15 | 293600 | | | 54 | 262640 | | | 92 | 247640 | | | 15 | 305142 | | |
| 16 | 291010 | | | 55 | 260110 | | | 93 | 245170 | | | 16 | 302561 | | |
| 17 | 301550 | 320000 | $f_3$ | 56 | 257580 | | | 94 | 242700 | | | 17 | 313056 | 320000 | $f_3$ |
| 18 | 298900 | | | 57 | 255050 | | | 95 | 240290 | | | 18 | 310418 | | |
| 19 | 296250 | | | | | | | 96 | 237880 | | | 19 | 307780 | | |
| 20 | 293600 | | | 58 | 265170 | 3275000 | $f_8$ | 97 | 235470 | | | 20 | 305142 | | |
| 21 | 291010 | | | 59 | 262640 | | | 98 | 233060 | | | 21 | 302561 | | |
| 22 | 288420 | | | 60 | 260110 | | | 99 | 230650 | | | 22 | 299980 | | |
| 23 | 285750 | | | 61 | 257580 | | | 100 | 228300 | | | 23 | 297400 | | |
| 24 | 283240 | | | 62 | 255050 | | | | | | | 24 | 294818 | | |
| 25 | 280650 | | | 63 | 252580 | | | | | | | 25 | 292237 | | |
| 26 | 291010 | 645000 | $f_4$ | 64 | 262640 | 4075000 | $f_9$ | | | | | 26 | 302561 | 645000 | $f_4$ |
| 27 | 288420 | | | 65 | 260110 | | | | | | | 27 | 299980 | | |
| 28 | 285750 | | | 66 | 257580 | | | | | | | 28 | 297400 | | |
| 29 | 283240 | | | 67 | 255050 | | | | | | | 29 | 294818 | | |
| 30 | 280650 | | | 68 | 252580 | | | | | | | 30 | 292237 | | |
| 31 | 278060 | | | 69 | 250110 | | | | | | | 31 | 289713 | | |
| 32 | 275470 | | | | | | | | | | | 32 | 287190 | | |
| 33 | 272880 | | | 70 | 270290 | 5650000 | $f_{10}$ | | | | | 33 | 284666 | | |
| 34 | 270290 | | | 71 | 267700 | | | | | | | 34 | 282142 | | |
| 35 | 280650 | 1095000 | $f_5$ | 72 | 265170 | | | | | | | 35 | 279618 | | |
| 36 | 278060 | | | 73 | 262640 | | | | | | | 36 | 289713 | 1095000 | $f_5$ |
| 37 | 275470 | | | 74 | 260110 | | | | | | | 37 | 287190 | | |
| 38 | 272880 | | | | | | | | | | | 38 | 284666 | | |
| 39 | 270290 | | | 75 | 278060 | 7170000 | $f_{11}$ | | | | | 39 | 282142 | | |
| 40 | 267700 | | | 76 | 275470 | | | | | | | 40 | 279618 | | |
| | | | | 77 | 272880 | | | | | | | | | | |
| | | | | 78 | 270290 | | | | | | | | | | |

For all values of $x$ below $x = 41$, a uniformly distributed load of 3000 lbs. per ft. will give greater moments than this table.

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 210 feet. | | | | SPAN, 210 feet. | | | | SPAN, 220 feet. | | | | SPAN, 220 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 41 | 277152 | 1095000 | $p_5$ | 77 | 284666 | 7170000 | $p_{11}$ | 1 | 337977 | 0 | $p_2$ | 41 | 288808 | 1095000 | $p_5$ |
| 42 | 274684 | | | 78 | 282142 | | | 2 | 335363 | | | 42 | 286344 | | |
| 43 | 272218 | | | 79 | 279618 | | | 3 | 332750 | | | 43 | 283881 | | |
| 44 | 269751 | | | 80 | 277152 | | | 4 | 330136 | | | 44 | 281418 | | |
| 45 | 267284 | | | 81 | 274684 | | | 5 | 327522 | | | 45 | 278954 | | |
| 46 | 264818 | | | 82 | 272218 | | | 6 | 324963 | | | 46 | 276544 | | |
| | | | | 83 | 269751 | | | 7 | 322404 | | | | | | |
| | | | | 84 | 267284 | | | 8 | 319845 | | | | | | |
| 47 | 279618 | 1900000 | $p_6$ | 85 | 264818 | | | | | | | 47 | 291271 | 1900000 | $p_6$ |
| 48 | 277152 | | | 86 | 262351 | | | 9 | 332217 | 120000 | - | 48 | 288808 | | |
| 49 | 274684 | | | 87 | 259884 | | | 10 | 329590 | | | 49 | 286344 | | |
| 50 | 272218 | | | | | | | 11 | 327017 | | | 50 | 283881 | | |
| 51 | 269751 | | | 88 | 269751 | 8245000 | $p_{12}$ | 12 | 324445 | | $p_2$ | 51 | 281418 | | |
| 52 | 267284 | | | 89 | 267284 | | | 13 | 321872 | | | 52 | 278954 | | |
| | | | | 90 | 264818 | | | 14 | 319300 | | | 53 | 276544 | | |
| 53 | 277152 | 2550000 | $p_7$ | 91 | 262351 | | | 15 | 316726 | | | | | | |
| 54 | 274684 | | | 92 | 259884 | | | | | | | 54 | 286344 | 2550000 | $p_7$ |
| 55 | 272218 | | | 93 | 257417 | | | 16 | 327017 | 320000 | $p_3$ | 55 | 283881 | | |
| 56 | 269751 | | | 94 | 254951 | | | 17 | 324445 | | | 56 | 281418 | | |
| 57 | 267284 | | | 95 | 252542 | | | 18 | 321872 | | | 57 | 278954 | | |
| 58 | 264818 | | | 96 | 250132 | | | 19 | 319300 | | | 58 | 276544 | | |
| | | | | 97 | 247723 | | | 20 | 316726 | | | 59 | 274135 | | |
| 59 | 274684 | 3275000 | $p_8$ | 98 | 245313 | | | 21 | 314154 | | | | | | |
| 60 | 272218 | | | 99 | 242904 | | | 22 | 311581 | | | 60 | 283881 | 3275000 | $p_8$ |
| 61 | 269751 | | | 100 | 240551 | | | 23 | 309008 | | | 61 | 281418 | | |
| 62 | 267284 | | | | | | | 24 | 306436 | | | 62 | 278954 | | |
| 63 | 264818 | | | 101 | 250132 | 9445000 | $p_{13}$ | 25 | 303862 | | | 63 | 276544 | | |
| 64 | 262351 | | | 102 | 247723 | | | | | | | 64 | 274135 | | |
| | | | | 103 | 245313 | | | 26 | 314154 | 645000 | $p_4$ | 65 | 271726 | | |
| 65 | 272218 | 4075000 | $p_9$ | 104 | 242904 | | | 27 | 311581 | | | 66 | 269317 | | |
| 66 | 269751 | | | 105 | 240551 | | | 28 | 309008 | | | | | | |
| 67 | 267284 | | | | | | | 29 | 306436 | | | 67 | 278954 | 4075000 | $p_9$ |
| 68 | 264818 | | | For all values of $x$ below $x = 33$, a uniformly distributed load of 3000 lbs. per ft. will give greater moments than this table. | | | | 30 | 303862 | | | 68 | 276544 | | |
| 69 | 262351 | | | | | | | 31 | 301344 | | | 69 | 274135 | | |
| 70 | 259884 | | | | | | | 32 | 298826 | | | 70 | 271726 | | |
| | | | | | | | | 33 | 296308 | | | 71 | 269317 | | |
| 71 | 279618 | 5650000 | $p_{10}$ | | | | | 34 | 293790 | | | | | | |
| 72 | 277152 | | | | | | | 35 | 291271 | | | 72 | 288808 | 5650000 | $p_{10}$ |
| 73 | 274684 | | | | | | | | | | | 73 | 286344 | | |
| 74 | 272218 | | | | | | | 36 | 301344 | 1095000 | $p_5$ | 74 | 283881 | | |
| 75 | 269751 | | | | | | | 37 | 298826 | | | 75 | 281418 | | |
| 76 | 267284 | | | | | | | 38 | 296308 | | | 76 | 278954 | | |
| | | | | | | | | 39 | 293790 | | | | | | |
| | | | | | | | | 40 | 291271 | | | | | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 220 feet. | | | | SPAN, 230 feet. | | | | SPAN, 230 feet. | | | | SPAN, 230 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 77 | 296308 | 7170000 | $p_{11}$ | 1 | 348960 | 0 | $p_2$ | 41 | 300495 | 1095000 | $p_5$ | 78 | 305416 | 7170000 | $p_{11}$ |
| 78 | 293790 | | | 2 | 346356 | | | 42 | 298033 | | | 79 | 302956 | | |
| 79 | 291271 | | | 3 | 343752 | | | 43 | 295573 | | | 80 | 300495 | | |
| 80 | 288808 | | | 4 | 341147 | | | 44 | 293112 | | | 81 | 298033 | | |
| 81 | 286344 | | | 5 | 338543 | | | 45 | 290651 | | | 82 | 295573 | | |
| 82 | 283881 | | | 6 | 335991 | | | 46 | 288243 | | | 83 | 293112 | | |
| 83 | 281418 | | | 7 | 333440 | | | 47 | 285834 | | | 84 | 290651 | | |
| 84 | 278954 | | | 8 | 330886 | | | | | | | 85 | 288243 | | |
| 85 | 276544 | | | | | | | | | | | 86 | 285834 | | |
| 86 | 274135 | | | | | | | 48 | 300495 | | | 87 | 283425 | | |
| 87 | 271726 | | | 9 | 343268 | | | 49 | 298033 | | | 88 | 281017 | | |
| 88 | 269317 | | | 10 | 340651 | | | 50 | 295573 | | | 89 | 278608 | | |
| 89 | 266909 | | | 11 | 338086 | | | 51 | 293112 | | | | | | |
| | | | | 12 | 335521 | 120000 | $p_2$ | 52 | 290651 | 1900000 | $p_6$ | | | | |
| 90 | 276544 | | | 13 | 332955 | | | 53 | 288243 | | | 90 | 288243 | | |
| 91 | 274135 | | | 14 | 330390 | | | | | | | 91 | 285834 | | |
| 92 | 271726 | | | 15 | 327825 | | | | | | | 92 | 283425 | | |
| 93 | 269317 | | | | | | | 54 | 298033 | | | 93 | 281017 | | |
| 94 | 266909 | 8245000 | | 16 | 338086 | | | 55 | 295573 | | | 94 | 278608 | | |
| 95 | 264553 | | $p_{12}$ | 17 | 335521 | | | 56 | 293112 | | | 95 | 276251 | | |
| 96 | 262200 | | | 18 | 332955 | | | 57 | 290651 | 2550000 | $p_7$ | 96 | 273894 | | |
| 97 | 259844 | | | 19 | 330390 | | | 58 | 288243 | | | 97 | 271538 | 8245000 | $p_{12}$ |
| 98 | 257490 | | | 20 | 327825 | 320000 | $p_3$ | 59 | 285834 | | | 98 | 269182 | | |
| 99 | 255136 | | | 21 | 325312 | | | | | | | 99 | 266826 | | |
| 100 | 252781 | | | 22 | 322800 | | | | | | | 100 | 264520 | | |
| 101 | 248072 | | | 23 | 320286 | | | 60 | 295573 | | | 101 | 262216 | | |
| | | | | 24 | 317773 | | | 61 | 293112 | | | 102 | 259912 | | |
| 102 | 259844 | 9445000 | | 25 | 315260 | | | 62 | 290651 | | | 103 | 257608 | | |
| 103 | 257490 | | $p_{13}$ | | | | | 63 | 288243 | 3275000 | $p_8$ | 104 | 255303 | | |
| 104 | 255136 | | | 26 | 325312 | | | 64 | 285834 | | | | | | |
| 105 | 252781 | | | 27 | 322800 | | | 65 | 283425 | | | 105 | 264520 | 9445000 | $p_{13}$ |
| | | | | 28 | 320286 | | | 66 | 281017 | | | 106 | 262216 | | |
| | | | | 29 | 317773 | | | | | | | 107 | 259912 | | |
| 106 | 262200 | 10770000 | | 30 | 315260 | | | 67 | 290651 | | | 108 | 257608 | | |
| 107 | 259844 | | | 31 | 312800 | | | 68 | 288243 | | | | | | |
| 108 | 257490 | | $p_{14}$ | 32 | 310338 | 645000 | $p_4$ | 69 | 285834 | 4075000 | $p_9$ | | | | |
| 109 | 255136 | | | 33 | 307877 | | | 70 | 283425 | | | 109 | 266826 | | |
| 110 | 252781 | | | 34 | 305416 | | | 71 | 281017 | | | 110 | 264520 | | |
| | | | | 35 | 302956 | | | | | | | 111 | 262216 | | |
| | | | | 36 | 300495 | | | | | | | 112 | 259912 | | |
| | | | | | | | | 72 | 300495 | | | 113 | 257608 | 10770000 | $p_{14}$ |
| | | | | 37 | 310338 | | | 73 | 298033 | | | 114 | 255303 | | |
| | | | | 38 | 307877 | | | 74 | 295573 | 5650000 | $p_{10}$ | 115 | 253051 | | |
| | | | | 39 | 305416 | 1095000 | $p_5$ | 75 | 293112 | | | | | | |
| | | | | 40 | 302956 | | | 76 | 290651 | | | | | | |
| | | | | | | | | 77 | 288243 | | | | | | |

For all values of $x$ below $x = 23$, a uniformly distributed load of 3000 lbs. per ft. will give greater moments than this table.

Below $x = 6$, a uniform load of 3000 lbs. per ft. gives greater moments than this table.

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 240 feet. | | | | SPAN, 240 feet. | | | | SPAN, 240 feet. | | | | SPAN, 250 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 1 | 359579 | | | 41 | 311758 | | | 80 | 311758 | | | 1 | 370260 | | |
| 2 | 357033 | | | 42 | 309350 | | | 81 | 309350 | | | 2 | 367720 | | |
| 3 | 354487 | | | 43 | 306941 | | | 82 | 306941 | | | 3 | 365180 | | |
| 4 | 351941 | 0 | $p_2$ | 44 | 304532 | 1095000 | $p_5$ | 83 | 304532 | | | 4 | 362640 | 0 | $p_2$ |
| 5 | 349395 | | | 45 | 302125 | | | 84 | 302125 | | | 5 | 360100 | | |
| 6 | 346900 | | | 46 | 299766 | | | 85 | 299766 | | | 6 | 357608 | | |
| 7 | 344404 | | | 47 | 297408 | | | 86 | 297408 | 7170000 | $p_{11}$ | 7 | 355166 | | |
| 8 | 341908 | | | 48 | 295050 | | | 87 | 295050 | | | 8 | 352624 | | |
| | | | | | | | | 88 | 292691 | | | | | | |
| | | | | | | | | 89 | 290332 | | | | | | |
| 9 | 354350 | | | 49 | 309350 | | | 90 | 287975 | | | 9 | 365072 | | |
| 10 | 351791 | | | 50 | 306941 | | | 91 | 285616 | | | 10 | 362520 | | |
| 11 | 349232 | | | 51 | 304532 | | | | | | | 11 | 360016 | | |
| 12 | 346675 | 120000 | $p_2$ | 52 | 302125 | 1900000 | $p_6$ | | | | | 12 | 357512 | 120000 | $p_2$ |
| 13 | 344116 | | | 53 | 299766 | | | 92 | 295050 | | | 13 | 355008 | | |
| 14 | 341558 | | | 54 | 297408 | | | 93 | 292691 | | | 14 | 352504 | | |
| 15 | 339000 | | | | | | | 94 | 290332 | | | 15 | 350000 | | |
| | | | | | | | | 95 | 287975 | | | 16 | 347544 | | |
| 16 | 349232 | | | 55 | 306941 | | | 96 | 285616 | | | | | | |
| 17 | 346675 | | | 56 | 304532 | | | 97 | 283258 | | | | | | |
| 18 | 344116 | | | 57 | 302125 | | | 98 | 280900 | 8245000 | $p_{12}$ | 17 | 357512 | | |
| 19 | 341558 | | | 58 | 299766 | 2550000 | $p_7$ | 99 | 278541 | | | 18 | 355008 | | |
| 20 | 339000 | | | 59 | 297408 | | | 100 | 276232 | | | 19 | 352504 | | |
| 21 | 336491 | 320000 | $p_3$ | 60 | 295050 | | | 101 | 273925 | | | 20 | 350000 | | |
| 22 | 333982 | | | 61 | 292691 | | | 102 | 271616 | | | 21 | 347544 | 320000 | $p_3$ |
| 23 | 331475 | | | | | | | 103 | 269308 | | | 22 | 345088 | | |
| 24 | 328966 | | | 62 | 302125 | | | | | | | 23 | 342632 | | |
| 25 | 326458 | | | 63 | 299766 | | | 104 | 278541 | | | 24 | 340176 | | |
| 26 | 324000 | | | 64 | 297408 | 3275000 | $p_8$ | 105 | 276232 | | | 25 | 337720 | | |
| | | | | 65 | 295050 | | | 106 | 273925 | | | 26 | 335264 | | |
| | | | | 66 | 292691 | | | 107 | 271616 | | | | | | |
| 27 | 333982 | | | 67 | 290332 | | | 108 | 269308 | | | | | | |
| 28 | 331475 | | | | | | | 109 | 267000 | | | 27 | 345088 | | |
| 29 | 328966 | | | 68 | 299766 | | | 110 | 264741 | | | 28 | 342632 | | |
| 30 | 326458 | | | 69 | 297408 | | | 111 | 262482 | | | 29 | 340176 | | |
| 31 | 324000 | 645000 | $p_4$ | 70 | 295050 | 4075000 | $p_9$ | 112 | 260225 | | | 30 | 337720 | | |
| 32 | 321541 | | | 71 | 292691 | | | 113 | 257966 | | | 31 | 335264 | 645000 | $p_4$ |
| 33 | 319082 | | | 72 | 290332 | | | 114 | 255708 | | | 32 | 332808 | | |
| 34 | 316625 | | | 73 | 287975 | | | 115 | 253500 | | | 33 | 330352 | | |
| 35 | 314166 | | | | | | | 116 | 251291 | | | 34 | 327896 | | |
| 36 | 311758 | | | | | | | 117 | 249082 | | | 35 | 325440 | | |
| | | | | | | | | 118 | 246875 | | | 36 | 323032 | | |
| | | | | | | | | 119 | 244666 | | | | | | |
| 37 | 321541 | | | 74 | 306941 | | | 120 | 242509 | | | | | | |
| 38 | 319082 | | | 75 | 304532 | | | | | | | 37 | 332808 | | |
| 39 | 316625 | 1095000 | $p_5$ | 76 | 302125 | 5650000 | $p_{10}$ | | A uniform load of 3000 lbs. per ft. gives greater moments than this table. | | | 38 | 330352 | | |
| 40 | 314166 | | | 77 | 299766 | | | | | | | 39 | 327896 | 1095000 | $p_5$ |
| | | | | 78 | 297408 | | | | | | | 40 | 325440 | | |
| | | | | 79 | 295050 | | | | | | | | | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 250 feet. | | | | SPAN, 250 feet. | | | | SPAN, 250 feet. | | | | SPAN, 260 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 41 | 323032 | 1095000 | $f_5$ | 80 | 323032 | 7170000 | $f_{11}$ | 121 | 262968 | 10770000 | $f_{14}$ | 1 | 380857 | 0 | $f_2$ |
| 42 | 320624 | | | 81 | 320624 | | | 122 | 260752 | | | 2 | 378369 | | |
| 43 | 318216 | | | 82 | 318216 | | | 123 | 258536 | | | 3 | 375880 | | |
| 44 | 315808 | | | 83 | 315808 | | | 124 | 256320 | | | 4 | 373392 | | |
| 45 | 313400 | | | 84 | 313400 | | | 125 | 254152 | | | 5 | 370903 | | |
| 46 | 311040 | | | 85 | 311040 | | | | | | | 6 | 368415 | | |
| 47 | 308680 | | | 86 | 308680 | | | | | | | 7 | 365926 | | |
| 48 | 306320 | | | 87 | 306320 | | | | For all values of $x$ below $x = 120$, a uniformly distributed load of 2700 lbs. per ft. will give greater moments than this table. | | | 8 | 363438 | | |
| 49 | 320624 | 1900000 | $f_6$ | 88 | 303960 | | | | | | | 9 | 375892 | 120000 | $f_2$ |
| 50 | 318216 | | | 89 | 301600 | | | | | | | 10 | 373345 | | |
| 51 | 315808 | | | 90 | 299288 | | | | | | | 11 | 370845 | | |
| 52 | 313400 | | | 91 | 296976 | | | | | | | 12 | 368345 | | |
| 53 | 311040 | | | 92 | 294664 | | | | | | | 13 | 365845 | | |
| 54 | 308680 | | | | | | | | | | | 14 | 363345 | | |
| | | | | 93 | 303960 | | | | | | | 15 | 360845 | | |
| 55 | 318216 | 2550000 | $f_7$ | 94 | 301600 | | | | | | | 16 | 358391 | | |
| 56 | 315808 | | | 95 | 299288 | | | | | | | | | | |
| 57 | 313400 | | | 96 | 296976 | | | | | | | 17 | 368345 | 320000 | $f_3$ |
| 58 | 311040 | | | 97 | 294664 | | | | | | | 18 | 365845 | | |
| 59 | 308680 | | | 98 | 292352 | 8245000 | $f_{12}$ | | | | | 19 | 363345 | | |
| 60 | 306320 | | | 99 | 290040 | | | | | | | 20 | 360845 | | |
| 61 | 303960 | | | 100 | 287776 | | | | | | | 21 | 358391 | | |
| | | | | 101 | 285512 | | | | | | | 22 | 355937 | | |
| 62 | 313400 | 3275000 | $f_8$ | 102 | 283248 | | | | | | | 23 | 353484 | | |
| 63 | 311040 | | | 103 | 280984 | | | | | | | 24 | 351030 | | |
| 64 | 308680 | | | 104 | 278720 | | | | | | | 25 | 348576 | | |
| 65 | 306320 | | | 105 | 277456 | | | | | | | 26 | 346169 | | |
| 66 | 303960 | | | 106 | 274192 | | | | | | | | | | |
| 67 | 301600 | | | | | | | | | | | 27 | 355937 | 645000 | $f_4$ |
| 68 | 299288 | | | 107 | 283248 | | | | | | | 28 | 353484 | | |
| | | | | 108 | 280984 | | | | | | | 29 | 351030 | | |
| 69 | 308680 | 4075000 | $f_9$ | 109 | 278720 | | | | | | | 30 | 348576 | | |
| 70 | 306320 | | | 110 | 277456 | | | | | | | 31 | 346169 | | |
| 71 | 303960 | | | 111 | 274192 | | | | | | | 32 | 343761 | | |
| 72 | 301600 | | | 112 | 271928 | | | | | | | 33 | 341353 | | |
| 73 | 299288 | | | 113 | 269664 | 9445000 | $f_{13}$ | | | | | 34 | 338945 | | |
| 74 | 296976 | | | 114 | 267400 | | | | | | | 35 | 336538 | | |
| | | | | 115 | 265184 | | | | | | | 36 | 334176 | | |
| 75 | 315808 | 5650000 | $f_{10}$ | 116 | 262968 | | | | | | | 37 | 331814 | | |
| 76 | 313400 | | | 117 | 260752 | | | | | | | | | | |
| 77 | 311040 | | | 118 | 258536 | | | | | | | | | | |
| 78 | 308680 | | | 119 | 256320 | | | | | | | | | | |
| 79 | 306320 | | | 120 | 254152 | | | | | | | | | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 260 feet. | | | | SPAN, 260 feet. | | | | SPAN, 260 feet. | | | | SPAN, 270 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 38 | 341353 | 1095000 | $p_5$ | 75 | 327091 | 5650000 | $p_{10}$ | 116 | 274530 | 9445000 | $p_{13}$ | 1 | 391292 | 0 | $p_2$ |
| 39 | 338945 | | | 76 | 324730 | | | 117 | 272353 | | | 2 | 388807 | | |
| 40 | 336538 | | | 77 | 322369 | | | 118 | 270176 | | | 3 | 386322 | | |
| 41 | 334176 | | | 78 | 320007 | | | 119 | 268000 | | | 4 | 383837 | | |
| 42 | 331814 | | | 79 | 317645 | | | 120 | 265822 | | | 5 | 381351 | | |
| 43 | 329453 | | | 80 | 315284 | | | 121 | 263646 | | | 6 | 378911 | | |
| 44 | 327091 | | | | | | | | | | | 7 | 376470 | | |
| 45 | 324730 | | | | | | | | | | | 8 | 374029 | | |
| 46 | 322369 | | | 81 | 331814 | 7170000 | $p_{11}$ | 122 | 272353 | 10770000 | $p_{14}$ | | | | |
| 47 | 320007 | | | 82 | 329453 | | | 123 | 270176 | | | | | | |
| 48 | 317645 | | | 83 | 327091 | | | 124 | 268000 | | | 9 | 386532 | 120000 | $p_2$ |
| | | | | 84 | 324730 | | | 125 | 265822 | | | 10 | 384036 | | |
| 49 | 331814 | 1900000 | $p_6$ | 85 | 322369 | | | 126 | 263646 | | | 11 | 381584 | | |
| 50 | 329453 | | | 86 | 320007 | | | 127 | 261468 | | | 12 | 379132 | | |
| 51 | 327091 | | | 87 | 317645 | | | 128 | 259291 | | | 13 | 376681 | | |
| 52 | 324730 | | | 88 | 315284 | | | 129 | 257115 | | | 14 | 374228 | | |
| 53 | 322369 | | | 89 | 312922 | | | 130 | 254984 | | | 15 | 371777 | | |
| 54 | 320007 | | | 90 | 310607 | | | | | | | 16 | 369325 | | |
| 55 | 317645 | | | 91 | 308291 | | | | For all values of $x$ below $x = 105$, a uniformly distributed load of 2700 lbs. per ft. will give greater moments than this table. | | | | | | |
| | | | | 92 | 305976 | | | | | | | | | | |
| 56 | 327091 | 2550000 | $p_7$ | 93 | 315284 | 8245000 | $p_{12}$ | | | | | 17 | 379132 | 320000 | $p_3$ |
| 57 | 324730 | | | 94 | 312922 | | | | | | | 18 | 376681 | | |
| 58 | 322369 | | | 95 | 310607 | | | | | | | 19 | 374228 | | |
| 59 | 320007 | | | 96 | 308291 | | | | | | | 20 | 371777 | | |
| 60 | 317645 | | | 97 | 305976 | | | | | | | 21 | 369325 | | |
| 61 | 315284 | | | 98 | 303661 | | | | | | | 22 | 366874 | | |
| | | | | 99 | 301345 | | | | | | | 23 | 364421 | | |
| | | | | 100 | 299076 | | | | | | | 24 | 361969 | | |
| 62 | 324730 | 3275000 | $p_8$ | 101 | 296807 | | | | | | | 25 | 359518 | | |
| 63 | 322369 | | | 102 | 294537 | | | | | | | 26 | 357110 | | |
| 64 | 320007 | | | 103 | 292269 | | | | | | | | | | |
| 65 | 317645 | | | 104 | 290000 | | | | | | | 27 | 366874 | 645000 | $p_4$ |
| 66 | 315284 | | | 105 | 287776 | | | | | | | 28 | 364421 | | |
| 67 | 312922 | | | 106 | 285553 | | | | | | | 29 | 361969 | | |
| 68 | 310607 | | | 107 | 283330 | | | | | | | 30 | 359518 | | |
| | | | | | | | | | | | | 31 | 357110 | | |
| 69 | 320007 | 4075000 | $p_9$ | 108 | 292269 | 9445000 | $p_{13}$ | | | | | 32 | 354703 | | |
| 70 | 317645 | | | 109 | 290000 | | | | | | | 33 | 352295 | | |
| 71 | 315284 | | | 110 | 287776 | | | | | | | 34 | 349888 | | |
| 72 | 312922 | | | 111 | 285553 | | | | | | | 35 | 347480 | | |
| 73 | 310607 | | | 112 | 283330 | | | | | | | 36 | 345118 | | |
| 74 | 308291 | | | 113 | 281107 | | | | | | | 37 | 342755 | | |
| | | | | 114 | 278883 | | | | | | | | | | |
| | | | | 115 | 276707 | | | | | | | | | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 270 feet. | | | | SPAN, 270 feet. | | | | SPAN, 270 feet. | | | | SPAN, 280 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 38 | 352295 | 1095000 | $p_5$ | 77 | 333347 | 5650000 | $p_{10}$ | 118 | 281444 | 9445000 | $p_{13}$ | 1 | 401839 | 0 | $p_2$ |
| 39 | 349888 | | | 78 | 331028 | | | 119 | 279258 | | | 2 | 399357 | | |
| 40 | 347480 | | | 79 | 328711 | | | 120 | 277118 | | | 3 | 396875 | | |
| 41 | 345118 | | | 80 | 326392 | | | 121 | 274977 | | | 4 | 394392 | | |
| 42 | 342755 | | | 81 | 324074 | | | 122 | 272836 | | | 5 | 391910 | | |
| 43 | 340391 | | | | | | | 123 | 270695 | | | 6 | 389471 | | |
| 44 | 338029 | | | 82 | 340391 | 7170000 | $p_{11}$ | | | | | 7 | 387032 | | |
| 45 | 335665 | | | 83 | 338029 | | | 124 | 279258 | 10770000 | $p_{14}$ | 8 | 384592 | | |
| 46 | 333347 | | | 84 | 335665 | | | 125 | 277118 | | | | | | |
| 47 | 331028 | | | 85 | 333347 | | | 126 | 274977 | | | 9 | 397100 | 120000 | $p_2$ |
| 48 | 345118 | 1900000 | $p_6$ | 86 | 331028 | | | 127 | 272836 | | | 10 | 394606 | | |
| 49 | 342755 | | | 87 | 328711 | | | 128 | 270695 | | | 11 | 392156 | | |
| 50 | 340391 | | | 88 | 326392 | | | 129 | 268555 | | | 12 | 389706 | | |
| 51 | 338029 | | | 89 | 324074 | | | 130 | 266458 | | | 13 | 387257 | | |
| 52 | 335665 | | | 90 | 321800 | | | 131 | 264362 | | | 14 | 384806 | | |
| 53 | 333347 | | | 91 | 319525 | | | 132 | 262266 | | | 15 | 382357 | | |
| 54 | 331028 | | | 92 | 317251 | | | 133 | 260169 | | | 16 | 379950 | | |
| 55 | 328711 | | | 93 | 314977 | | | 134 | 258073 | | | | | | |
| | | | | 94 | 312703 | | | 135 | 255977 | | | 17 | 389706 | 320000 | $p_3$ |
| 56 | 338029 | 2550000 | $p_7$ | 95 | 321800 | 8245000 | $p_{12}$ | | | | | 18 | 387257 | | |
| 57 | 335665 | | | 96 | 319525 | | | | | | | 19 | 384806 | | |
| 58 | 333347 | | | 97 | 317251 | | | | | | | 20 | 382357 | | |
| 59 | 331028 | | | 98 | 314977 | | | | | | | 21 | 379950 | | |
| 60 | 328711 | | | 99 | 312703 | | | | | | | 22 | 377542 | | |
| 61 | 326392 | | | 100 | 310428 | | | | | | | 23 | 375135 | | |
| 62 | 324074 | | | 101 | 308155 | | | | | | | 24 | 372727 | | |
| | | | | 102 | 305880 | | | | | | | 25 | 370321 | | |
| 63 | 333347 | 3275000 | $p_8$ | 103 | 303607 | | | | | | | 26 | 367956 | | |
| 64 | 331028 | | | 104 | 301332 | | | | | | | 27 | 365593 | | |
| 65 | 328711 | | | 105 | 299102 | | | | | | | | | | |
| 66 | 326392 | | | 106 | 296873 | | | | | | | 28 | 375135 | 645000 | $p_4$ |
| 67 | 324074 | | | | | | | | | | | 29 | 372727 | | |
| 68 | 321800 | | | 107 | 305880 | 9445000 | $p_{13}$ | | | | | 30 | 370321 | | |
| 69 | 319525 | | | 108 | 303607 | | | | | | | 31 | 367956 | | |
| | | | | 109 | 301332 | | | | | | | 32 | 365593 | | |
| 70 | 328711 | 4075000 | $p_9$ | 110 | 299102 | | | | | | | 33 | 363228 | | |
| 71 | 326392 | | | 111 | 296873 | | | | | | | 34 | 360863 | | |
| 72 | 324074 | | | 112 | 294643 | | | | | | | 35 | 358500 | | |
| 73 | 321800 | | | 113 | 292414 | | | | | | | 36 | 356135 | | |
| 74 | 319525 | | | 114 | 290184 | | | | | | | 37 | 353771 | | |
| 75 | 317251 | | | 115 | 288000 | | | | | | | 38 | 351406 | | |
| 76 | 314977 | | | 116 | 285814 | | | | | | | | | | |
| | | | | 117 | 283629 | | | | | | | | | | |

For all values of $x$ below $x = 74$, a uniformly distributed load of 2700 lbs. per ft. will give greater moments than this table.

# MOMENTS.

$$M_x = Rx - m.$$

| Span, 280 feet. | | | | Span, 280 feet. | | | | Span, 280 feet. | | | | Span, 290 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 39 | 360863 | 1095000 | $f_5$ | 77 | 344356 | 5650000 | $f_{10}$ | 118 | 292764 | 9445000 | $f_{13}$ | 1 | 412113 | 0 | $f_2$ |
| 40 | 358500 | | | 78 | 342035 | | | 119 | 290571 | | | 2 | 409675 | | |
| 41 | 356135 | | | 79 | 339713 | | | 120 | 288420 | | | 3 | 407237 | | |
| 42 | 353771 | | | 80 | 337392 | | | 121 | 286271 | | | 4 | 404800 | | |
| 43 | 351406 | | | 81 | 335071 | | | 122 | 284121 | | | 5 | 402362 | | |
| 44 | 348043 | | | | | | | | | | | 6 | 399965 | | |
| 45 | 346678 | | | 82 | 351406 | 7170000 | $f_{11}$ | 123 | 292764 | 10770000 | $f_{14}$ | 7 | 397568 | | |
| 46 | 344356 | | | 83 | 348043 | | | 124 | 290571 | | | 8 | 395172 | | |
| 47 | 342035 | | | 84 | 346678 | | | 125 | 288420 | | | | | | |
| 48 | 339713 | | | 85 | 344356 | | | 126 | 286271 | | | 9 | 407722 | 120000 | $f_3$ |
| 49 | 337393 | | | 86 | 342035 | | | 127 | 284121 | | | 10 | 405274 | | |
| | | | | 87 | 339713 | | | 128 | 281970 | | | 11 | 402825 | | |
| 50 | 351406 | 1900000 | $f_6$ | 88 | 337392 | | | 129 | 279821 | | | 12 | 400377 | | |
| 51 | 348043 | | | 89 | 335071 | | | 130 | 277713 | | | 13 | 397928 | | |
| 52 | 346678 | | | 90 | 332793 | | | 131 | 275606 | | | 14 | 395480 | | |
| 53 | 344356 | | | 91 | 330514 | | | 132 | 273500 | | | 15 | 393031 | | |
| 54 | 342035 | | | 92 | 328235 | | | 133 | 271392 | | | 16 | 390624 | | |
| 55 | 339713 | | | 93 | 325957 | | | 134 | 269286 | | | | | | |
| 56 | 337393 | | | 94 | 323678 | | | 135 | 267220 | | | 17 | 400377 | 320000 | $f_3$ |
| | | | | | | | | 136 | 265156 | | | 18 | 397928 | | |
| 57 | 346678 | 2550000 | $f_7$ | 95 | 332793 | 8245000 | $f_{12}$ | 137 | 263092 | | | 19 | 395480 | | |
| 58 | 344356 | | | 96 | 330514 | | | 138 | 261028 | | | 20 | 393031 | | |
| 59 | 342035 | | | 97 | 328235 | | | 139 | 258963 | | | 21 | 390624 | | |
| 60 | 339713 | | | 98 | 325957 | | | 140 | 256943 | | | 22 | 388217 | | |
| 61 | 337392 | | | 99 | 323678 | | | | | | | 23 | 385810 | | |
| 62 | 335071 | | | 100 | 321442 | | | | | | | 24 | 383402 | | |
| | | | | 101 | 319206 | | | | | | | 25 | 380995 | | |
| 63 | 344356 | 3275000 | $f_8$ | 102 | 316971 | | | | | | | 26 | 378630 | | |
| 64 | 342035 | | | 103 | 314735 | | | | | | | 27 | 376264 | | |
| 65 | 339713 | | | 104 | 312500 | | | | | | | | | | |
| 66 | 337392 | | | 105 | 310307 | | | | | | | 28 | 385810 | 645000 | $f_4$ |
| 67 | 335071 | | | 106 | 308113 | | | | | | | 29 | 383402 | | |
| 68 | 332793 | | | 107 | 305921 | | | | | | | 30 | 380995 | | |
| 69 | 330514 | | | 108 | 303730 | | | | | | | 31 | 378630 | | |
| | | | | 109 | 301535 | | | | | | | 32 | 376264 | | |
| 70 | 339713 | 4075000 | $f_9$ | 110 | 310307 | 9445000 | $f_{13}$ | | | | | 33 | 373897 | | |
| 71 | 337392 | | | 111 | 308113 | | | | | | | 34 | 371531 | | |
| 72 | 335071 | | | 112 | 305921 | | | | | | | 35 | 369165 | | |
| 73 | 332793 | | | 113 | 303730 | | | | | | | 36 | 366843 | | |
| 74 | 330514 | | | 114 | 301535 | | | | | | | 37 | 364516 | | |
| 75 | 328235 | | | 115 | 299343 | | | | | | | 38 | 362192 | | |
| 76 | 325957 | | | 116 | 297150 | | | | | | | | | | |
| | | | | 117 | 294957 | | | | | | | | | | |

For all values of $x$ below $x = 61$, a uniformly distributed load of 2700 lbs. per ft. will give greater moments than this table.

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 290 feet. | | | | SPAN, 290 feet. | | | | SPAN, 290 feet. | | | | SPAN, 300 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 39 | 371531 | | | 77 | 355260 | | | 118 | 303814 | | | 1 | 422463 | | |
| 40 | 369165 | | | 78 | 352977 | | | 119 | 301655 | | | 2 | 420026 | | |
| 41 | 366843 | | | 79 | 350694 | 565000 | $p_{10}$ | 120 | 299537 | | | 3 | 417590 | | |
| 42 | 364516 | | | 80 | 348411 | | | 121 | 297420 | 944500 | $p_{13}$ | 4 | 415153 | 0 | $p_2$ |
| 43 | 362192 | 1095000 | $p_5$ | 81 | 346128 | | | 122 | 295302 | | | 5 | 412716 | | |
| 44 | 359868 | | | 82 | 343793 | | | 123 | 293185 | | | 6 | 410320 | | |
| 45 | 357543 | | | | | | | 124 | 291067 | | | 7 | 407923 | | |
| 46 | 355260 | | | | | | | 125 | 288950 | | | 8 | 405526 | | |
| 47 | 352977 | | | 83 | 359868 | | | | | | | | | | |
| 48 | 350694 | | | 84 | 357543 | | | | | | | | | | |
| 49 | 348411 | | | 85 | 355260 | | | 126 | 297420 | | | 9 | 418080 | | |
| 50 | 346128 | | | 86 | 352977 | | | 127 | 295302 | | | 10 | 415633 | | |
| | | | | 87 | 350694 | | | 128 | 293185 | | | 11 | 413226 | | |
| 51 | 359868 | | | 88 | 348411 | 7170000 | $p_{11}$ | 129 | 291067 | | | 12 | 410820 | 120000 | $p_2$ |
| 52 | 357543 | | | 89 | 346128 | | | 130 | 288950 | | | 13 | 408413 | | |
| 53 | 355260 | 1900000 | $p_6$ | 90 | 343793 | | | 131 | 286832 | | | 14 | 406006 | | |
| 54 | 352977 | | | 91 | 341509 | | | 132 | 284715 | 10770000 | $p_{14}$ | 15 | 403600 | | |
| 55 | 350694 | | | 92 | 339226 | | | 133 | 282597 | | | 16 | 401233 | | |
| 56 | 348411 | | | 93 | 336943 | | | 134 | 280480 | | | | | | |
| | | | | | | | | 135 | 278402 | | | | | | |
| | | | | 94 | 346128 | | | 136 | 276326 | | | 17 | 410820 | | |
| 57 | 357543 | | | 95 | 343793 | | | 137 | 274250 | | | 18 | 408413 | | |
| 58 | 355260 | | | 96 | 341509 | | | 138 | 272174 | | | 19 | 406006 | | |
| 59 | 352977 | | | 97 | 339226 | | | | | | | 20 | 403600 | | |
| 60 | 350694 | 2550000 | $p_7$ | 98 | 336943 | | | 139 | 284715 | | | 21 | 401233 | | |
| 61 | 348411 | | | 99 | 334660 | | | 140 | 282597 | | | 22 | 398866 | 320000 | $p_3$ |
| 62 | 346128 | | | 100 | 332418 | | | 141 | 280480 | | | 23 | 396500 | | |
| 63 | 343793 | | | 101 | 330177 | 8245000 | $p_{12}$ | 142 | 278402 | 12800000 | $p_{15}$ | 24 | 394133 | | |
| | | | | 102 | 327935 | | | 143 | 276326 | | | 25 | 391766 | | |
| | | | | 103 | 325693 | | | 144 | 274250 | | | 26 | 389400 | | |
| 64 | 352977 | | | 104 | 323452 | | | 145 | 272174 | | | 27 | 387033 | | |
| 65 | 350694 | | | 105 | 321251 | | | | | | | | | | |
| 66 | 348411 | | | 106 | 319051 | | | | | | | 28 | 396500 | | |
| 67 | 346128 | 3275000 | $p_8$ | 107 | 316851 | | | For all values of $x$ below $x = 51$, a uniformly distributed load of 2700 lbs. per ft. will give greater moments than this table. | | | | 29 | 394133 | | |
| 68 | 343793 | | | 108 | 314651 | | | | | | | 30 | 391766 | | |
| 69 | 341509 | | | 109 | 312451 | | | | | | | 31 | 389400 | | |
| | | | | | | | | | | | | 32 | 387033 | | |
| 70 | 350694 | | | 110 | 321251 | | | | | | | 33 | 384666 | 645000 | $p_4$ |
| 71 | 348411 | | | 111 | 319051 | | | | | | | 34 | 382300 | | |
| 72 | 346128 | | | 112 | 316851 | | | | | | | 35 | 379933 | | |
| 73 | 343793 | 4075000 | $p_9$ | 113 | 314651 | 9445000 | $p_{13}$ | | | | | 36 | 377606 | | |
| 74 | 341509 | | | 114 | 312451 | | | | | | | 37 | 375280 | | |
| 75 | 339226 | | | 115 | 310290 | | | | | | | 38 | 372953 | | |
| 76 | 336943 | | | 116 | 308131 | | | | | | | | | | |
| | | | | 117 | 305972 | | | | | | | | | | |

# MOMENTS.

$$M_x = Rx - m.$$

| SPAN, 300 feet. | | | | SPAN, 300 feet. | | | | SPAN, 300 feet. | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | | $x$ | $R$ | $m$ | |
| 39 | 382300 | | | 78 | 363726 | | | 119 | 312733 | | |
| 40 | 379933 | | | 79 | 361440 | | | 120 | 310606 | | |
| 41 | 377606 | | | 80 | 359153 | 5650000 | $p_{10}$ | 121 | 308480 | 9445000 | $p_{13}$ |
| 42 | 375280 | | | 81 | 356866 | | | 122 | 306353 | | |
| 43 | 372953 | | | 82 | 354620 | | | 123 | 304226 | | |
| 44 | 370626 | 1095000 | $p_5$ | 83 | 352373 | | | 124 | 302100 | | |
| 45 | 368300 | | | | | | | 125 | 300013 | | |
| 46 | 366013 | | | 84 | 368300 | | | | | | |
| 47 | 363726 | | | 85 | 366013 | | | 126 | 308480 | | |
| 48 | 361440 | | | 86 | 363726 | | | 127 | 306353 | | |
| 49 | 359153 | | | 87 | 361440 | | | 128 | 304226 | | |
| 50 | 356866 | | | 88 | 359153 | | | 129 | 302100 | | |
| | | | | 89 | 356866 | | | 130 | 300013 | | |
| 51 | 370626 | | | 90 | 354620 | 7170000 | $p_{11}$ | 131 | 297926 | | |
| 52 | 368300 | | | 91 | 352373 | | | 132 | 295840 | | |
| 53 | 366013 | 1900000 | $p_6$ | 92 | 350126 | | | 133 | 293753 | 10770000 | $p_{14}$ |
| 54 | 363726 | | | 93 | 347880 | | | 134 | 291666 | | |
| 55 | 361440 | | | 94 | 345633 | | | 135 | 289620 | | |
| 56 | 359153 | | | 95 | 343426 | | | 136 | 287573 | | |
| | | | | 96 | 341220 | | | 137 | 285526 | | |
| 57 | 368300 | | | | | | | 138 | 283480 | | |
| 58 | 366013 | | | 97 | 350126 | | | 139 | 281433 | | |
| 59 | 363726 | | | 98 | 347880 | | | 140 | 279386 | | |
| 60 | 361440 | 2550000 | $p_7$ | 99 | 345633 | | | 141 | 277340 | | |
| 61 | 359153 | | | 100 | 343426 | | | | | | |
| 62 | 356866 | | | 101 | 341220 | | | 142 | 289620 | | |
| 63 | 354620 | | | 102 | 339013 | | $p_{12}$ | 143 | 287573 | | |
| | | | | 103 | 336806 | | | 144 | 285526 | | |
| 64 | 363726 | | | 104 | 334600 | 8245000 | | 145 | 283480 | 12800000 | $p_{15}$ |
| 65 | 361440 | | | 105 | 332393 | | | 146 | 281433 | | |
| 66 | 359153 | | | 106 | 330186 | | | 147 | 279386 | | |
| 67 | 356866 | 3275000 | $p_8$ | 107 | 327980 | | | 148 | 277340 | | |
| 68 | 354620 | | | 108 | 325773 | | | 149 | 275293 | | |
| 69 | 352373 | | | | | | | | | | |
| 70 | 350126 | | | 109 | 334600 | | | | | | |
| | | | | 110 | 332393 | | | | | | |
| | | | | 111 | 330186 | | | 150 | 283480 | 14325000 | $p_{16}$ |
| 71 | 359153 | | | 112 | 327980 | | | | | | |
| 72 | 356866 | | | 113 | 325773 | 9445000 | $p_{13}$ | | | | |
| 73 | 354620 | | | 114 | 323566 | | | | | | |
| 74 | 352373 | 4075000 | $p_9$ | 115 | 321400 | | | | | | |
| 75 | 350126 | | | 116 | 319233 | | | | | | |
| 76 | 347880 | | | 117 | 317066 | | | | | | |
| 77 | 345633 | | | 118 | 314900 | | | | | | |

For all values of $x$ below $x = 45$, a uniformly distributed load of 2700 lbs. per ft. will give greater moments than this table.

# ILLUSTRATION OF THE USE OF THE TABLES.

A FEW illustrations will make clear the use of the tables.

1st, SINGLE SYSTEM OF BRACING. — Take, for instance, the Pratt truss, worked out on p. 107, Fig. 99. Here we have $l = 90$ feet required to find the maximum strains due to live load.

For any upper flange, as $A$, Table II. for span 90 feet, p. xxii., gives at once the greatest moment. Thus, since the centre of moments for $A$ is at the foot of the post $ab$, we must find the maximum moment at ten feet from the left end. For this point, the table gives at once,

$$\text{Maximum moment} = Rx - m = 157888 \times 10 - 125000 = 1453880;$$

dividing this by lever arm of $A$, which is 10 feet, we have at once,

$$A = 145388 \text{ pounds} = 72.69 \text{ tons.}$$

In like manner, for $E$, we have $x = 40$; and hence

$$E \times 10 = Rx - m = 145610 \times 40 - 2550000 = 3274400;$$

hence

$$E = 327440 \text{ pounds} = 163.72 \text{ tons.}$$

So for any flange, upper or lower, the greatest strain due to such a rolling load as our tables assume can be at once and easily found. This rolling load is believed to be such as to give greater strains than can ever occur in practice. To the strains thus found, we must, of course, add the strains due to dead load. If we assume this at 0.5 ton per foot, or 5 tons at each upper apex, as on p. 107, we have at once for $A$, since the re-action at left is 20 tons,

$$A \times 10 = 20 \times 10, \text{ or } A = 20 \text{ tons};$$

$$E \times 10 = 20 \times 40 - 5(30 + 20 + 10), \text{ or } E = 50 \text{ tons.}$$

The total strains are, therefore,

$$A = 72.69 + 20 = 92.69 \text{ tons};$$

$$E = 163.72 + 50 = 213.72 \text{ tons.}$$

Comparing these with the strains found on p. 107, viz., $A = 100.33$, and $E = 223$, tons, we see that the method given there gives us greater strains than our table. This would indicate that our "locomotive excess" of 33 tons, there adopted, is somewhat large, and that 28 tons would nearer meet the requirements of practice, and cause the values of p. 107 and those found by use of the table to agree quite closely.

For any diagonal, as $fg$, we can easily find the requisite shear from Table I. Thus, we have, in present case, $l = 90$, $x = 40$, $l - x = 50$, $l - x + 8 = 58$. We see at once, from

Table I., p. iii., that the limit for span 90 feet is $48\frac{1}{3}$; hence, for $x = 40$, we must use formula II. We have, then,

$$\text{Shear} = \frac{15000}{90}58 + \frac{175000}{90}50 - \frac{3210000}{90} - 15000 = 56222 = 28.1 \text{ tons.}$$

To this add the dead-load shear, which is 5 tons, and we have shear for *fg* 33.1 tons. The shear found on p. 108, for 33 tons locomotive excess, is 40 tons. As before remarked, the results there given are somewhat large, and a locomotive excess of 28 tons would give a closer agreement.

The preceding, if followed carefully, will fully explain the use of our tables in all cases where we have but a single system of bracing.

2d, DOUBLE, OR MULTIPLE, SYSTEM. — For any flange, find from Table II. the greatest moment for its nearest centre of moments, and then find what uniform load will give this same moment at the same point; calculate the flange for this uniform load divided into apex loads, and acting upon each system.

If $x$ is the distance from left end to centre of moments, and $p$ is the uniform load per unit of length, then $\frac{px}{2}(l - x)$ is the moment. Put this equal to the moment found from Table II., and the value of $p$ can be found, in pounds per foot, which would give the same moment as the table, at the given point. The flange can then be calculated for this uniform load. Each flange should thus be calculated for its own equivalent uniform load.

For any brace, find the greatest shear at the foot of it from Table II.; then find the equivalent uniform moving load; divide this into apex weights, and calculate the brace for this loading.

If $m$ is the uniform moving load per unit of length, coming on from right and extending up to a distance of $x$ from the left end, then the shear is $\frac{m(l - x)^2}{2l}$.

Put this equal to the shear found from Table II., and the value of $m$ can be found in pounds per foot, which would give the same shear as the table. The brace can then be calculated for this uniform moving load. Each brace should thus be calculated for its own equivalent uniform load.